Chemical

Week

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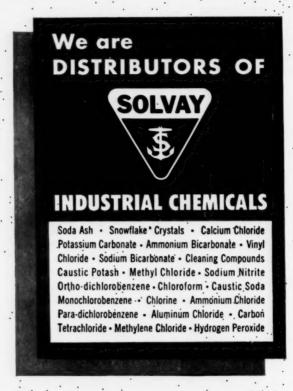
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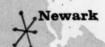
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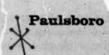
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COVER PHOTO-WIDE WORLD

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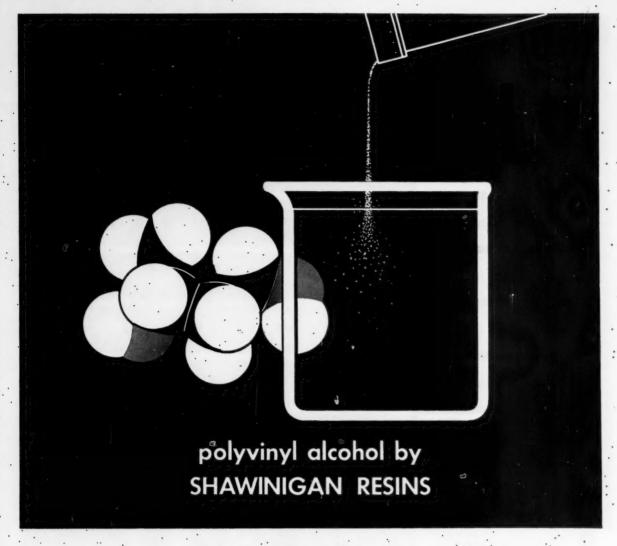
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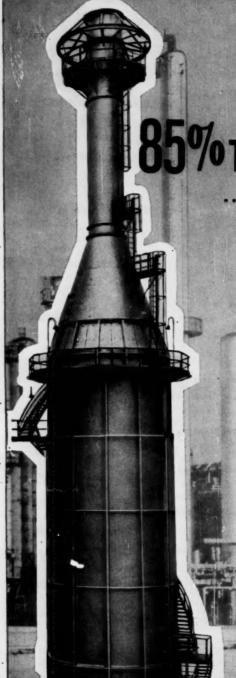
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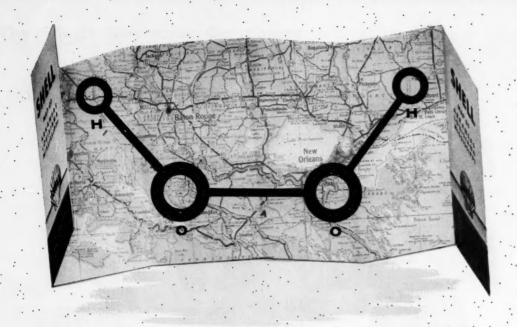
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$$\begin{array}{c} O \\ CH_2 = CH \cdot CH + H_2O_2 & \longrightarrow CH_2 \cdot CH \cdot CH \\ OH & OH \end{array}$$

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VIEWPOINT

SHOULD the U.S. patent system be junked? That iconoclastic question posed by Columbia's Professor Seymour Melman (see p. 63) is healthy if it forces us to examine a system that far antedates our modern technology.

"The effort to operate a patent system formulated . . . a century ago has proved . . . increasingly awkward," says Melman. Patents often disguise rather than reveal discoveries, interferences and litigation are common, and the law doesn't recognize team research—to name a few of the objections.

Our patent system was founded in the context of a handicraft society, an individual artisan was likely to invent a new gadget, or a better way of doing things. Unforeseeable at that time was the rise of the corporation, and consequently of corporate research in which the individual operates as one member of a team. Equally unforeseeable, at a time when chemists still talked of "dephlogisticated air," was the complexity of today's technology.

There's no denying that the patent system as it operates today is cumbersome, and that it is sometimes utilized to defeat the ends for which it was established.

But junking the system might well be throwing the baby out with the bathwater. A more conservative approach is to modify the systemto make it serve its purpose under today's changed conditions. And the purpose, it seems obvious, is to preserve for the inventor-be it an individual or a corporation-the competitive advantage of discovery.

Strip away patent protection, and you force the inventor to rely upon. secrecy to preserve his advantage. And secrecy, because it cuts off communication between scientists, leads to wasteful duplication of research effort. Recent lawsuits (CW, July 5, p. 23) point up the difficulties companies face in guarding their trade secrets-difficulties that will be compounded in the absence of patent protection.

Editor-in-Chief

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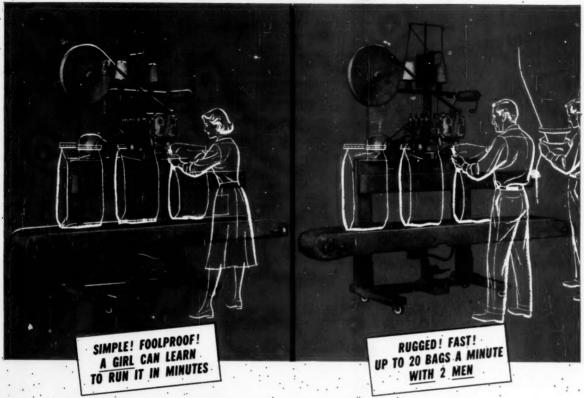


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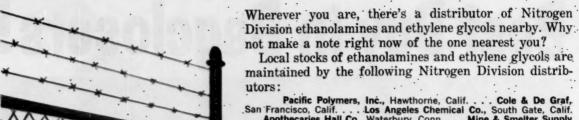


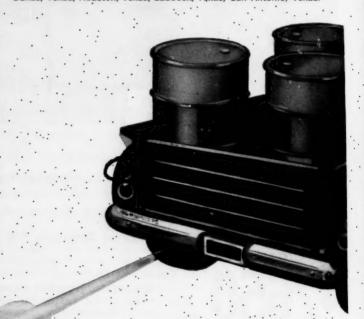
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Business Newsletter

CHEMICAL WEEK July 12, 1958 Chemical process companies have been faring well, relative to the total economy.

Last week, for instance, the Federal Trade Commission and the Securities and Exchange Commission reported these comparisons of first-quarter performances in 1958 and '57:

- In sales, two process industries—paper and allied products, chemicals and allied products—topped the national average. Actually, sales of paper products slipped 7%, those of chemicals and allied products, 8%. But the drop in all-manufacturing sales was 9%. Two other process industries—rubber products and stone, clay and glass products—just equalled this 9% drop.
- In net profits after taxes, four process industries came out better than the 40% slide in all-manufacturing. Slippage in process industry profits: chemicals, 25%; paper, 32%; petroleum refining and related industries, 34%; rubber, 38%; primary nonferrous metals, 52%; stone, clay and glass, 58%.

Out in the Pacific Northwest, chemical business is bucking the downward trend.

Several companies recently visited by CW's Pacific Coast editor report that March and April business was their "best on record." One district sales manager for a nationally operating chemical company said his district business in the first quarter was up 20%, although his company's total business for the same period was down 20%.

Among products moving briskly in the area: resins for plywood, chemicals for pulp and paper mills, and agricultural chemicals.

More expansion in the upper Ohio River Valley? Stauffer Chemical this week joins Dow and Air Reduction as a prospect for the area.

Stauffer has just purchased a 271-acre tract along the Ohio at Arroyo, W. Va., about 50 river-miles downstream from Pittsburgh. The site—sold by Monongahela Power Co. for more than \$100,000—is adjacent to Koppers' coal-tar division plant, which started niacin production last year. Stauffer says it has no firm plans to build on the new site.

Late last month, Dow President Leland Doan hinted that Dow's next expansion may be in the Ohio Valley (CW, June 28, p. 26) and Air Reduction revealed plans for a carbide acetylene plant tentatively slated for St. Mary's, W. Va. (CW Business Newsletter, June 28).

A major boost for U.S. urea capacity is planned by Olin Mathieson Chemical Corp. and Sun Oil. The two firms have "exchanged letters of

Business

Newsletter

(Continued)

intent" to form a joint company and build a 73,000-ton/year urea plant at the latter's Marcus Hook, Pa., refinery, where it operates a 300-ton/day ammonia plant. The plant will substantially increase previous estimates of total U.S. urea capacity, which had been expected to hit 793,000 ton/year by early '59 (CW, July 5, p. 58).

Also expanding in urea: Mississippi Chemical Corp., a cooperative, whose board of directors has just authorized a \$2-million program for construction of an additional plant at Yazoo City. Completion target: within 15 months. The plant will produce 100 tons/day of solid urea, also provide high-nitrogen liquid fertilizers for direct application.

When Spencer Chemical recently suspended production of nitrogen fertilizers at Vicksburg, Miss. (CW, July 5, p. 25), a company spokesman said that one factor in the indefinite shutdown was that "sale of our nitrogen products in the Vicksburg marketing area has been adversely affected by competitors with tax advantages not available to private enterprise companies such as Spencer."

Dow has formed a new subsidiary with BASF Oberzee, N. V., overseas arm of Badische Analin & Soda-Fabrik, A.G. (Germany). The new firm will "look into" production of acetylene-derived chemicals, and may build a plant in Texas. Each parent company owns 50% of the firm's \$6 million stock.

Formation of the new company may revive speculation about Dow's raw material plans for its new fiber, Zefran (CW Technology Newsletter, Aug. 31, '57). Production of the "nitrile alloy" is just getting under way at Dow's James River (Williamsburg, Va.) plant. One industry rumor has been that Dow would make its own vinyl pyrrolidone, the dye-receptive ingredient of Zefran. General Aniline and Film is currently the only U.S. producer. Even in Zefran's early production stages, Dow will consume some 2 million lbs./year. Vinyl pyrrolidone is a product of high-pressure acetylene chemistry, fathered by Badische's Walter Reppe.

Two leading plant design and construction firms—Fluor Corp. and Foster Wheeler Corp.—are "talking merger," but no plans have been set. Foster Wheeler (New York) has been losing money, even though foreign operations have been profitable. Fluor (Los Angeles), by contrast, has a strong domestic record, but lags in foreign business. Fluor's '57 earned billings were \$152.4 million; Foster Wheeler's, \$173.2 million.

A chemical concern is challenging a local tax on use of utility products such as electric power, natural gas, and water. At Buffalo, N. Y., Allied Chemical Corp. is asking the state courts to determine whether its facilities there should be exempt from this levy. Allied had asked the city for a \$22,312.20 refund, arguing that its use of utilities for manufacturing purposes is not covered by the statute—which specifies "for domestic or commercial use."

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CHEMICALS







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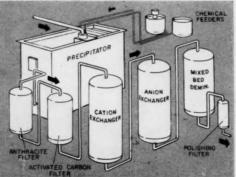
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Herman Mark, on return from tour of Soviet labs, gives . . .

Plastics Report from Russia

Russia now is far behind the U.S. as a plastics producer; but it's striving—and there's a possibility that it may be successful—to gain the lead by 1965. So reports polymer authority Herman Mark, back in New York last week after a two-week tour of research laboratories in the Moscow and Leningrad areas of the Soviet Union.

Director of Polytechnic Institute of Brooklyn's Polymer Research Institute and a consultant of high repute, Mark toured the Soviet laboratories as a guest of the Russian Academy of Sciences.

His observations—aired last week in a 25-page report to the State Dept. and a New York press conference (sponsored by Foster Grant Co.*)—may be summarized as follows:

- The U.S. is now out-producing Russia in all types of polymers by a ratio of about 4 to 1.
- Russian polymer research "is of good quality" and totals about 30-40% of U.S. polymer research and development.
- Principal obstacle to the Soviets' overtaking the U.S. in polymer production is their lack of technically trained people.

Expansion Goal: With his estimate that plastics production in the U.S.S.R. is 20-30% of that in the U.S., Mark provides a basis for comparing projected production trends.

U.S. production of plastics and resins this year is expected to amount to about 4.5 billion lbs. Using a recently estimated trend-line for the 1957-75 period (CW, March 8, p. 35) it appears that U.S. production in '65 will be about 7.3 billion lbs. If U.S. population is up to 195 million, plastics output will be 37 lbs. per capita.

By Mark's estimate, Soviet polymer production now stands in the neighborhood of 1.1 billion lbs./year. Premier Nikita Khrushchev has declared that plastics and synthetic resin production will

*To publicize Mark's observations on Russia and to reveal that the company's new Manchester, N.H., nylon-6 plant is in full production.



increase eightfold by '65 — which means that the Russians are shooting for approximately 9 billion lbs./year. If the Russian population hits 230 million in that year, per-capita plastics production would be 39 lbs.

Parallel Paths: Mark says Soviet polymer researchers match their U.S. counterparts in ability and are utilizing similar materials and techniques. So his description of what he has seen is a fair guide to where the plastics industries of both countries are headed.

At Moscow's 40-year-old Karpov Institute of Physical Chemistry, for example, basic research on colloids is turning up information applicable to the development of inorganic films and fibers. And studies have been initiated on the mechanism of the formation of omega polymers, so-called "popcorn polymers." Object to make these currently valueless products in usable form, capitalizing on their insolubility and high softening characteristics.

Mark reports that all laboratories he visited possessed modern equipment — electron microscopes, mass spectrographs, etc. Mark concludes that "there exists a high-level precision instrument industry on a fairly large scale in the Soviet Union."

Free Radicals: About 30 graduate students and research fellows at the new University of Moscow (built from '49 to '53) are probing the mechanisms of fundamental organic reactions initiated by free radicals.

Mark reports, "One group studies the action of H-atoms and free radicals on acetylene, ethylene and propylene in the gas phase at ordinary temperature . . . the reaction products formed at any time are analyzed in a mass spectrograph."

Among other polymer research at the university is a project concerning the mechanical properties of isotactic polypropylene and polystyrene and the solution-behavior of block and graft copolymers.

The Institute of Element Organic Compounds is headed by Professor A. Nesmijanov (Mark's host), president of the Russian Academy of Sciences, and is devoted to synthesis of organic compounds containing such elements as boron, fluorine, silicon, phosphorus and titanium. Nesmijanov is personally researching ferrocene-type compounds, has prepared a series of

omega-aminocarboxylic acids by the telomerized polymerization of ethylene at high pressures.

One product stemming from his work, polyoenanthic acid amide, is a nylon-type material, which is being made into continuous filament and staple fiber on a pilot-plant scale.

No Side Reactions: Professor Korschak, associate director of the institute, is preparing what Mark calls "very interesting" polymers by a new principle: polymerization through bifunctional recombination at moderate temperatures (which eliminate complicating side reactions). Diisopropyl ferrocene and diphenyl diisopropyl silicate have been polymerized in this manner. The products have high melting points, may be molded, cast or spun.

Another Korschak team is polymerizing vinyl compounds with boron alkyl catalysts (e.g., triisobutylboron). Linear polymers of vinyl acetate, vinyl chloride, etc., have been made this way.

Mark reveals the Russians are conducting systematic studies on highpressure polymerization of ethylene. They are also looking at existing methods of polymerizing and copolymerizing ethylene, propylene and other alpha-olefins. Getting particular attention: the application of activated oxide catalysts, according to the Phillips and Standard Oil of Indiana processes.

Elastomer Lab: In Leningrad, at The Institute of Macromolecular Chemistry, there's great interest in tin organics (e.g., trivinylphenyl tin). In the same city is The Lebedev Institute of Synthetic Rubber Research, which Mark calls "a center of elastomer research and development, with which hardly any other existing institutions can be compared."

In view of these Soviet accomplishments, how should U.S. government and industry react to Khrushchev's recent bid for technological aid from the U.S. and other capitalistic nations (see CW, June 7, p. 13)? Mark sees the risk involved, but feels that we should consider taking the chance.

"The Russians are fully aware of the uses of plastics in electronics, guided missiles and other military fields," he reports. "But it may be that by sharing our own know-how in producing useful consumer products of plastics, we may help divert their attention to consumer lines."

Oil Salvage Setback

Two disappointing developments in chemical-process recovery of oil and oil derivatives were revealed last week: a downward reappraisal of reserves available in the Athabasca oil sands near Regina, Sask., and suspension of Union Oil's \$9-million shale oil research operation in northwest Colorado.

According to the Alberta Research Council, only about one-tenth of a previously estimated 200 billion bbls. of oil is recoverable.

N. H. Grace, director of research for the Alberta Research Council, now says that only 23 billion bbls. can be recovered, given existing technologies and world demand and prices for oil.

Nuclear Heat Might Help: Ultimately, however, the yield may be increased. A serious drilling problem to date has been the high viscosity of the thick Athabasca oil, which prevents it from flowing into production holes. If nuclear energy could be applied, said Grace, the temperature of a reservoir could be raised "so that the oil may be produced as a normal low-viscosity oil."

Another recovery method being considered is strip surface mining in which oil and sand are dug up and later separated. This method is expected to produce the first commercial oil

Shale Shutdown: Union Oil President A. C. Rubel, commenting on the company's decision to suspend shale oil operations at Rifle, Colo., said "Union Oil's technical and engineering knowledge obtained from its three years of research in mining, retorting and refining has progressed so rapidly that further operations of the 10,000-tons/day plant will be suspended to permit the firm to make a more detailed economic analysis."

Said Rubel: "The present price of crude oil, due to worldwide oversupply, is depressed to a point where it is not only impossible to determine just what a competitive price might be, but also the production of a large amount of oil from this or any other locality would only augment the present condition of oversupply."

But the Union Oil president reported encouraging research results on a process for producing oil from shale.



To develop its vast resources, Alaska's state government will weigh new incentives for industry.

In the New State, New Fields for the CPI

Statehood—now likely to be officially conferred on Alaska by December—is expected to speed the growth of chemical industry in that vast storehouse of natural riches. But the timetable for industry is still in doubt.

Last week's Congressional action, setting the stage for Alaska to become the 49th (and largest) state of the Union, means that an on-the-scene state government—not a 3,500-mile-distant federal government—will be making the rules for the industrial development that Alaskans ardently desire.

So far as raw materials are concerned, Alaska abounds with opportunities for chemical process companies; and a home-rule state government can be counted on to try to make those opportunities as attractive as possible. But dearth of local markets is still the big hitch (CW, Feb. 9, '57, p. 34).

Mostly in Planning: Nevertheless, the dawn of Alaskan statehood this week finds numerous process industry projects in exploratory stages, a few others being built or blueprinted, and at least two in actual operation.

The two already onstream are a rayon-grade pulp mill and a petroleum refinery—both in the 500-mile-long. Panhandle that stretches southeasterly along the Pacific Coast to within 300 miles of Seattle.

Also in the Panhandle are sites for a dissolving pulp plant, now under construction; and two newsprint plants that have been blueprinted but are being deferred—at least partly because of the recession—for further economic studies.

In the speculative or preliminary planning phases are a number of proposals for chemical process projects, some of which seem good bets for the future but not quite ripe for present circumstances. These ideas range all the way from caustic-chlorine plant to nonferrous metal smelter.

Cold-Soda Process Pulp: Considerable latent interest is reported in establishing a specialty hardwood pulp plant, to use the tremendous stands of paper birch in the Cook Inlet area.

Industry thinking is that it might be economically feasible to manufacture, hardwood pulp admixture there, ship it to container board and toilet tissue plants in Canada, Washington, Oregon or California.

Plans for two small oil refineries are under consideration. It appears likely that one might pay off somewhere near Seward, which up to now is Alaska's only year-round seaport. Oilmen say there's no question that one of the major oil companies will be ready to start commercial production on the Kenai Peninsula southwest of Seward. It's known that Richfield Oil—now drilling in the Milnilchik Dome area in partnership with Standard Oil of California—has brought in one good well, possibly two.

The other refinery now being contemplated would be at Fairbanks, would supply petroleum products to the two Air Force bases as well as the civilian users there. It would require construction of a 300-mile pipeline to bring in crude oil from the Kenai Peninsula region.

Coal Chemicals and Char: Because Alaska has tremendous coal deposits, much interest has been aroused by the recently revealed process to extract tars and chemicals from raw coal and obtain a low-cost, by-product char that can be used economically for generating electric power (CW, April 19, p. 54).

One possible application for this method: a mine-mouth steam and electric plant in the Nenana coal fields that lie southwest of Fairbanks, near Mount McKinley (highest point in North America, elevation 20,269 ft.). Golden Valley Electrical Assn. (Fairbanks) has contracted for engineering studies on such a project by North Pacific Consultants (Portland, Ore.), a firm that specializes in Alaskan engineering problems.

During the past year, a number of large U. S. coal companies have expressed interest in Alaskan coal fields, and several are starting extensive field surveys this summer. The feeling is that by operating in Alaska, they could meet coal deficiencies of the Pacific Coast states and also supply critical needs of the Far East, particularly in Japan and the Philippines. Most Alaskan coals are bituminous, but there are some anthracite and coking coals.

Metal Ores Abundant: It's known that Alaska has great deposits of metallic ores—iron, copper, nickel, tin, molybdenum, chromium, mercury and platinum. But many ore beds are inaccessible, and few have been adequately surveyed or assayed. Other bars to development have been delays in construction of hydroelectric projects and recurrent surpluses of some metals on the world market.

There's continuing high interest in the possibility of establishing a ferrochrome plant near Seward to utilize the chrome ore reserves on the Kenai Peninsula. Go-ahead on the Bradley Lake hydro project would be one key to the ferrochrome plant.

Various U. S. steel and mining concerns are keeping an eye on large-scale explorations and metallurgical investigations of iron ores. Of particular significance: current study of the Kluckwan iron ores near Haines in the Panhandle. The titaniferous magnetite deposit there is believed to be one of the largest on the continent. At present, attention is being given to production of high-iron concen-

trates for shipment to West Coast U. S. steel mills. Whenever the nearby Taiya River is harnessed, some of the 2 million kw. of power that it could generate could be used for production of electric-furnace pig iron, as well as other metals.

Aluminum in Doubt: The proposal for the Taiva hydro project had encouraged Aluminum Co. of America to plan an aluminum reduction plant for the Skagway vicinity, but this plan is now dormant if not dead. The river flows out of Canada, and the preferred dam site is on Canadian soil. However, residents see a possibility that the whole scheme might be revived some day. When they gain the right to vote in national elections, they might assume enough political power to prod the federal government into negotiating with Canada for joint development of the Taiva project. As bait, the U. S. might offer to the land-locked Canadians-in northwest British Columbia and southwest Yukon-corridors through the Alaskan Panhandle to tidewater shipping ports.

Chemical projects being pondered include a chlorine-caustic soda plant, possibly near the capital, Juneau, to supply the pulp and paper mills in the Panhandle; a nitrogen fertilizer plant near Anchorage; and calcium carbide and industrial gases plants. There's a good chance that statehood might boost construction activity to the point where a cement plant would be economical; and population growth could lead to various kinds of food processing plants. One beverage plant is already being discussed: a brewery to utilize the high-grade barley grown in the Tanana Valley near Fairbanks.

More Inviting to Capital: Will statehood mean that industrial projects such as these will come to fruition sooner than would have been the case if Alaska had continued in territorial status? This is highly conjectural.

In Washington last week, one Alaska booster who helped sell Congress on statehood admitted to CW that "good, solid reasons for statehood are a little nebulous now."

"But we strongly believe," he went on, "that Alaska as a state will be much more attractive to risk capital and to financial underwriters than Alaska has been as a territory."

This was the line sounded also by Gov. Michael Stepovich and former Gov. B. Frank Heintzleman when they hurried on to New York to talk before a group of investment people. They painted a rosy picture of financial reward in the "new frontier" for those who move in to develop Alaska's natural resources.

Land Withdrawals: The U. S. government now holds title to 99% of Alaska's 582,000 square miles—and it will hang on to more than 65% of the land even after the new state government picks out some 100 million acres for development under state laws. Alaska is expected to choose tracts that contain coal, oil, natural gas and other mineral wealth.

With statehood, Alaska will be free to guide its own business destiny—to open those great natural resources to private development, and to hold out to settlers and entrepreneurs whatever inducements seem necessary.

Among the greatest needs now are cheap electric power in abundance and extension of highways and railways. The U. S. Bureau of Reclamation has determined there are more than 200 sites for possible hydro projects capable of producing more than 8 million kw. each of reasonably cheap power; but only one hydro plant is now in operation. The Alaska Railroad-U. S. government-owned and -operated-has only 550 miles of track in use, though Alaska is more than twice as large as Texas. Alaska now has 3,000 miles of main roads, some 800 miles of secondary roads and 350 miles of isolated roads.

But upon attaining statehood, Alaska will benefit from the federal highway program on a basis of parity with other states. And with Alaskans taking part in Congressional and Presidential elections, it is likely that the federal government will be more concerned about Alaska's power and transportation needs.

Last year, the territorial legislature granted certain tax exemptions to new industries using Alaskan resources and providing employment for Alaskans. Observers expect the first state legislature to go to equal lengths to attract industry.

As ex-Governor Heintzleman told the New York investment group this week, "We can expect that in offering attractive terms to prospective users of the resources of its lands, the state will go as far as is consistent with public interest."

COMPANIES

General Aniline & Film Corp. (New York) has acquired all capital stock of Reproduction Products Co. (Detroit), maker of dry and semimoist diazo sensitized products.

Hancock Oil Co. (Long Beach, Calif.)—whose refinery was completely destroyed by fire last May—will not go into an anticipated merger. Probably on the strength of reports about merger discussions with a major Eastern oil company—said to be Standard Oil of New Jersey—the company's common stock vaulted from less than \$30/share to a high of \$57 over the past two months. When it was revealed that the major oil company had decided not to make an offer, the price of Hancock stock plummeted to less than \$40 last week. Jersey Standard said it would "neither affirm nor deny" that it was the prospective buyer.

American Potash & Chemical Corp. (Los Angeles) has moved its executive office staff into a new, three-story headquarters building adjacent to the company's previous main office building. The new address: 3000 West Sixth St.

Armour & Co. (Chicago) also has new general offices. After 50 years at 4301 South Racine Ave., Armour headquarters was moved last fortnight to 401 North Wabash Ave.

Thiokol Chemical Corp. (Trenton, N.J.) has been awarded a \$17.9-million U.S. Army contract for production of solid-propellent rocket engines at the Longhorn Ordnance Works (Marshall, Tex.).

Albemarle Paper Mfg. Co. (Richmond, Va.) is offering to its stockholders subscription rights on \$3.5 million of 5½% subordinated convertible debentures due in '78.

EXPANSION

Thorium: Rio Tinto Dow Ltd. (subsidiary of Dow Chemical of Canada and Rio Tinto Mining Co.) will build a plant near Elliot Lake, Ontario, Canada. Raw material will come from uranium mining operations in Canada's Blind River-Algoma area, will be processed into crude thorium concentrates and refined metallurgical grades of thorium sulfate and thorium oxide.

Petroleum: Shell Oil Co. of Canada will build a \$2-million distillate hydrodesulfurization plant at its North Burnaby, B. C., refinery. The plant is slated for completion by Feb. '59.

Acrolein: Shell Chemical Corp. has awarded The Lummus Co. a contract to build an acrolein unit at Shell's Norco, La., plant. The unit, part of Shell's \$10-million glycerine expansion program at Norco (CW Business Newsletter, June 28), is slated for completion late in '59. It will help Norco boost its output to 35 million lbs. of glycerine yearly.

Beryllium: The Beryllium Corp. (Loveland, Colo.) will build a mill at its beryl ore properties near Drake. Operated with Cordillera Mining Co. (Dallas), it will have a capacity of 200 tons/day of raw material.

In May, American Beryl Corp. started up another beryl ore mill in the area—a 100-tons/day plant at Masonville (CW, June 21, p. 26).

Rubber: Dunlop Tire and Rubber Corp. is spending \$175,000 to expand car tire production capacity 10% at its Buffalo plant.

FOREIGN

Explosives/Dominican Republic: A new \$150,000, 5-tons/day plant will make the Dominican Republic self-sufficient in explosives. In joint operation with a 12-tons/day sulfuric acid plant, it will produce dynamite, sulfuric and nitric acids, nitroglycerine and gunpowder.

Petrochemicals/Japan: Japan's young petrochemical industry has organized itself in its bid for world markets. Ten companies have formed the Japanese Petro-Chemical Industry Assn., headed by Mitsubishi Petro-Chemical Co. President Kamesaburo Ikeda. The group, a spokesman said, is "urging the government to cut down imports of petrochemical products and equipment and help us step up our exports instead . . We can make chemical equipment for our petrochemical plants."

PVC/Iran: Montecatini (Milan) has been hired by the Development and Resources Corp. (New York) to supervise construction of the 9-million-lbs./year polyvinyl chloride plant at Ahwaz, Iran, as part of the development plan for the oil-rich Khuzestan region (CW, April 5, p. 20).

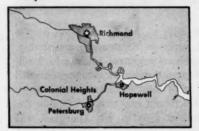
Montecatini will draw up bid specifications for the \$6.5-million plant, supervise construction and startup, and train Iranian technical personnel. Under a \$1-2-million market development program, Montecatini will encourage expansion of local fabrication facilities by displaying end-products and importing PVC until the new plant is completed early in '61. The plant will also produce chlorine and caustic soda. With a planned fertilizer plant, it's expected to form the crux of a new petrochemical industry for Iran.



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Washington Newsletter

CHEMICAL WEEK July 12, 1958 Russian technical information will be easier to come by soon.

Congress has okayed \$510,000 for Commerce's Office of Technical Services to set up a central clearing house for all government-translated documents. Current plans call for putting the clearing house into service by early fall.

OTS will not make any translations itself. It will tap all government agencies now translating Russian material for its documents. Primarily, these are the military services and Central Intelligence Agency.

Nongovernment-translated material will still be collected by Special Libraries Assn. in Chicago. The two groups, however, are working out a system so that OTS can publish information on all material available at both clearing houses. Copies of translated material will be sold at cost by OTS in much the same manner as the agency now handles technical reports.

Internal Revenue Service has tossed in the towel in trying to hold that annual royalties paid on patent rights must be treated as income for tax purposes. Last week, IRS announced that it no longer will take the position that mere retention of an interest resembling a royalty by the assignor or transferor of a patent "in and of itself prevents capital gain treatment."

Congress passed legislation in 1954 to provide that such income could be treated as a capital gain; but the service had continued to stick by its "ordinary income" ruling. After the tax courts had ruled against IRS, last week's announcement was made.

Rocket fuel expansion is continuing with government aid. The government has granted certificates of necessity for five-year tax amortization to two companies for production and research and development facilities. Callery Chemical Co. (Douglas County, Kansas) was authorized for \$3.8 million of facilities for high-energy fuels for missiles and jet planes (65% allowed for accelerated amortization); Olin Mathieson Chemical Corp., \$790,000 cost of new facilities at Carterville, Ill. (50% allowed), and \$118,000 in Williamson County, Illinois (60% allowed), both for research and development of rocket and missile propulsion systems.

But Office of Defense Mobilization turned down certificates for American Pipe Line Corp. and West Coast Pipeline Co. for their long-proposed oil pipeline projects.

American wanted to build a products line of 500,000-bbls./day capacity from Beaumont, Tex., to Newark, N. J.; West Coast wanted to build a crude-oil pipeline from Winks, Tex., to Norwalk, Calif., with ultimate 500,000-bbls./day capacity. ODM was not convinced the prod-

Washington

Newsletter

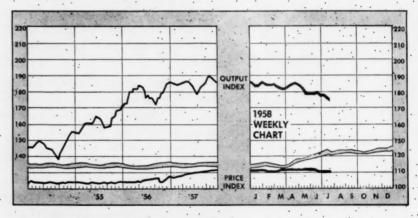
(Continued)

ucts were essential to national defense. Certification is a prerequisite for a government loan guarantee.

A big staff shuffle is on at Atomic Energy Commission. The director of the reactor development division, W. Kenneth Davis, is becoming vice-president of Bechtel Corp. (San Francisco); an assistant director of the division, Clark Goodman, will leave July 15 to become vice-president of Schlumberger Ltd. in charge of research laboratories in Ridgefield, Conn. Earlier, the deputy director of the reactor division, Louis Roddis; the general manager, K. E. Fields; and the deputy general manager, R. W. Cook, had resigned.

Prospects of federal aid to science education improve. The House Education Committee, on an impressive 23-to-3 vote, has okayed a bill for \$826.5 million in federal scholarships, student loans and help for programs to stimulate and improve instruction in mathematics, the sciences and foreign languages. A big thing to note: the size of the committee vote. It indicates that the Eisenhower Administration's spokesmen in the House and the Democratic majority intend to put some steam behind the bill.

Time could be an important factor. The Senate Education Committee hasn't acted on comparable legislation, mainly because of a feeling that the House wouldn't be interested in such a federal program.

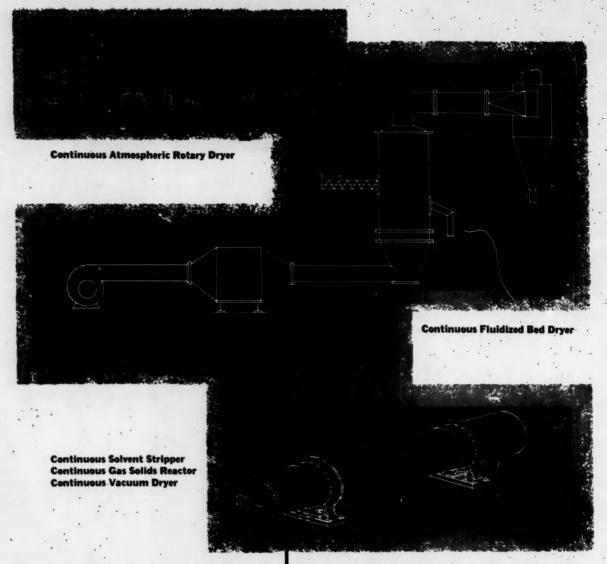


Business Indicators

WEEKLY	Latest Week	Preceding Year Week Ago	
Chemical Week output index (1947-49=100) Chemical Week wholesale price index (1947=100)	172:0 · 110.6 ·	174.5 110.6 110.1	
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	40.66	39.93 45.1	2

		Exports			Imports		
	 Latest	Preceding	Year.	Latest	Preceding	Year	
Foreign Trade (million dollars)	Month	. Month	Ago	Month	Month	Ago	
Chemicals, total	120.2	106.8	139.0	24.3	22.7 ·	25.1	
Coal-tar products	8.2	. 8.5	8.9	4.1	5.3	4:7	
Industrial chemicals	15.3	18.7	20.1	.6.7	. 5.8	6.9	





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PRODUCTION



Sugar researcher Iwata checks crystals with Polaroid film.

Camera Charts Crystals

There's a saying that the camera doesn't lie. And within the past few weeks the saying has become an actual fact for sugar producers in Hawaii, where the Speed Graphic camera with a Polaroid back has been put to use as a quality-control device in the sugar crystallization process.

As in most chemical industry processing where crystallization plays a part, the size and shape of the crystals that are grown determine the ease with which further processing of raw sugar can be carried out. The

larger and more uniform the shape of the raw sugar crystal, the easier it is to process. Small and irregular crystals tend to cause agglomeration, trap mother liquor, make centrifugation difficult. Large, uniform crystals result in high-purity finished product small, irregular crystals give lower purity product.

To help sugar operators check crystal growth and obtain a permanent record for future comparison, the photographic technique was developed at the Hawaiian Sugar Planters' Assn.

Experimental Station by senior technologist George Sloane and technical assistant Harry Iwata.

The result of their one-year research has been the installation of HSPA Grain Cameras at six sugar plantations.

How It Works: The Speed Graphic camera is mounted on a rotating platform on the top of a light-tight enclosure. Directly across from the camera is a ground-glass for focusing. The operator slide-mounts the sample of raw sugar crystals and then places it on a platform inside the light-tight enclosure.

The ground glass is positioned over the sample and the height of the sample platform is adjusted to bring the crystals into focus. A 75-watt GE opal light beneath the platform illuminates the crystals on the sample slide.

The camera is then spun into place over the sample and the shot is taken. After waiting one minute, the print is removed from the back of the camera for check of size and shape. The camera's special 13-mm. focal-length lens simplifies the examination. Crystal magnification: 9 to 10 diameters.

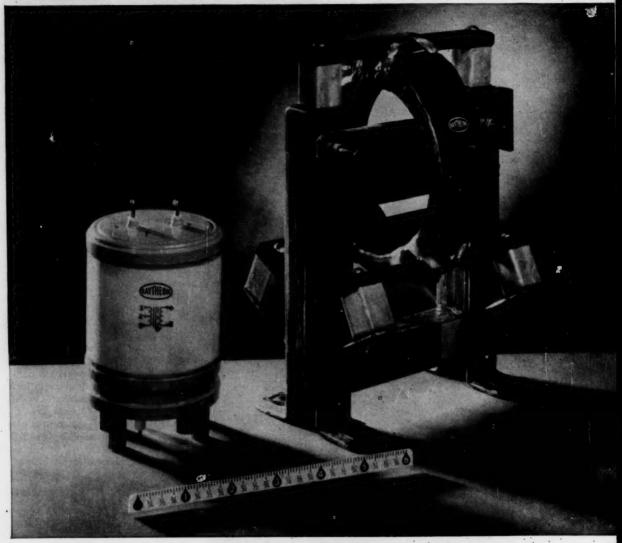
The new technique replaces the use of a microscope. And while it seems to offer little, if any, advantage in speed, it is invaluable for the permanent record it affords.

EQUIPMENT

Polyethylene Linings: A new spray coating method of lining steel tanks, pipes and valves with high-density polyethylene has been developed by Tank Lining Corp. (246 Washington Road, Pittsburgh). The polyethylene is specially prepared, although TLC says it is not extended, modified or plasticized before use. Method of application requires special preparation of the steel surface. The polyethylene is then sprayed on, heat-treated under careful control. TLC will license other coatings-application firms.

Jacketed 'Y' Valve: Parks-Cramer' Co. (Fitchburg, Mass.) is out with a new jacketed "Y" valve that extends its line of jacketed piping, valves and fittings. The fully jacketed valve is recommended for use with steam, hot oil and other heating mediums, is said to provide low-flow resistance of gate





PACK MORE POWER PER CUBIC INCH

3M inert fluids cut size and weight up to 75%; improve electrical performance

Through important size and weight changes—3M fluorochemical inert fluids are creating a new range of applications for transformers like those above. They're "made like a magnetron" by Raytheon Manufacturing Co., Inc.

By using 3M FC's as dielectric coolants, transformers now can be reduced as much as 75% in both size and weight . . . with improved electrical performance!

The reason is twofold. First—FC's permit the use of much smaller transformer core and coils. Second—they reduce the space required for insulation.

How so? FC's have a unique combination of properties chemical inertness, high heat stability, low dielectric constant and high dielectric strength, plus good heat transfer characteristics. What's more, they are self-healing, inhibit corona, and actually improve electrical performance.

Ideal as coolants, liquid sealants, and insulators, FC's from 3M's Fluorochemicals Division are already proving themselves in atomic particle diffuser components, in metering devices, power tubes, amplifiers, radar units, antenna couplers, electric choppers. Now, products like these can be used in many ways never before practical.



Investigate 3M FC's—and other 3M Chemical Products shown here—in terms of improving the design and performance of your own products. For free literature, write: 3M Company, Dept. WE48, St. Paul 6, Minnesota.

Flexibility in synthetic rubber now can be maintained for extended periods, despite solvent exposure. 3M's new plasticizer, TURPOL® NC-1200, resists leaching out under prolonged exposure. Unlike ordinary plasticizers, TURPOL will not affect the strength or solvent-resistance of base rubber. And TURPOL softened rubber swells no more after solvent contact than non-plasticized rubber. IRVINGTON CHEMICAL DIVISION.

Protection for pharmaceuticals in packages made from KEL-F® halofluorocarbon plastic materials exemplifies new packaging opportunities created by KEL-F Brand 3M chloro-trifluoroethylene polymer. KEL-F films offer complete impermeability, even to formaldehyde and medical alcohol. Exceptional chemical inertness safeguards the purity of the contents. Thus, many pharmaceuticals now can be film-packaged. JERSEY CITY CHEMICAL DIVISION.







Stamping metal products like these as well as complex-contour steel shapes can now be done with resin dies, thanks to 3M Brand Tooling Compound 113, a new steel-powder-based, two-part compound. Low material costs and simplified handling bring savings from 50%, to 90% for short-run dies. Final dies have high impact and compression strength and electrical conductivity. HASTINGS CHEMICAL DIVISION.

CHEMICAL PRODUCTS GROUP • Fluorochemicals Division • Hastings Chemical Division • Irvington Chemical Division • Jersey City Chemical Division • Color and Acid Division.

MINNESOTA MINING AND MANUFACTURING COMPANY ... WHERE RESEARCH IS THE KEY TO TOMORROW





Tidewater Oil Company's Delaware City refinery... the largest ever built as a single project, requires maintenance services in step with unique requirements. Catalytic contract maintenance assures Tidewater Oil of flexible, on-the-job service only as required ... qualified mechanics for turnaround periods plus complete cooperation with Tidewater's own staff. Results?—lower operating costs... higher profit.

CATALYTIC

CONSTRUCTION



Philadelphia 2
Pennsylvania
Toledo, Ohio
In Canada: Catalytic Construction
of Canada, Limited;
Sarnia, Ontario;
Toronto, Ontario;
Montreal, Quebec

PRODUCTION

and plug valves with the control of a globe valve. Valves are now offered in 2- and 3-in. sizes. Size range from 1½ to 8 in. is planned.

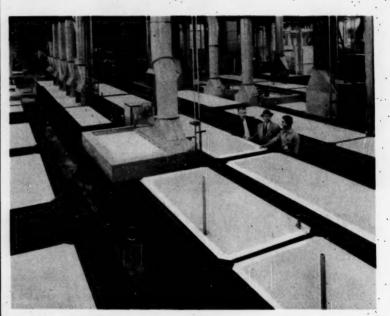
Reusable Disposable Gloves: Plasticsmith, Inc. (Box 415, Concord, Calif.), says its new plastic gloves, made of 1.75-mil heat-sealed polyethylene, are rugged enough to be reusable and inexpensive enough to be disposable. Gloves are available in small, medium and large sizes, packaged in rolls of 12 to 1,000. Cost is about 3¢/glove in 1,000-glove roll.

Flowmeter: Revere Corp. of America (Wallingford, Conn.) is out with a new system for flowmetering exotic fuel and special fluids at -350 to 300 F temperatures. System features low pressure drop (less than 2.5 psi.) and transmitter accuracy of ±1% over a flow range of 3 to 600 gpm. Rate and totalizing indication are pro-

vided. Impeller transmitters are offered in stainless steel and aluminum alloy.

Gear Drive: A new, compact gear drive that bolts directly to the machine to be driven is available from The Falk Corp. (3001 West Canal St., Milwaukee). The flange-mounted drives—for horizontal or vertical applications—are available in single-reduction for 0.5-10 hp. and two double-reduction ratios for 0.5-5 hp.

Warning Beacon: Federal Sign and Signal Corp. (8700 South State St., Chicago) offers a new 360-degree revolving beacon for use as a warning signal. The Model 271 beacon may be angled upward to within three degrees of vertical, or downward to slightly below horizontal. Heat-resistant glass dome covers the 200-watt, sealed-beam lamp; flashing rate is 60 per minute.



Plastic Armor Guards Plating Tanks

Standing ready for the recent startup of the world's largest aircraft plating plant is this battery of PVC-lined plating tanks. The plant, at Mc-Clellan Air Force Base (Sacramento), will use a wide variety of plating solutions, including chrome, copper, brass, rhodium, indium, silver, gold.

New England Lead Burning Co. (San Leandro, Calif.) lined and covered 135 tanks with flexible Koroseal tanklining sheet, manufactured by B. F. Goodrich Industrial Products Co. (Marietta, O.). Hoods and duct work were fabricated from high-impact rigid Koroseal sheet.



"ARCHIE" STARTED SOMETHING

The petroleum which Nature created from prehistoric creatures such as Archeopteryx (Archie) eons ago, has come to a strange and wonderful new life today. In the form of petrochemicals, it now plays an ever-increasing part in the great chemical industry.

Sinclair's experience—raw materials—research—technical "know-how"—well located petrochemical facilities—all are at your service. Whatever your chemical needs, whether it's established tonnage chemicals or new products just emerging from the test tube—consult us today!

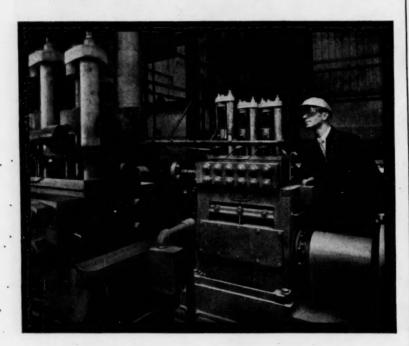
Anhydrous Ammonia • Ammonium Nitrate
Solutions • Aque Ammonia • Nitrogen Fertilizer
Solutions • Aliphatic Solvents • Odorless
Solvents • Aromatic Solvents • Heavy Aromatic
Solvent • Toluene (Nitration Grade) • Xylene
(Five Degree) • Para Xylene • Propylene
Tetramer • Sulfur • Sulfonates (Oil Soluble) •
Corrosion Inhibitors • Lube Oil Additives

SINCLAIR CHEMICALS, INC.

Affiliate of Sinclair Refining Company 600 Fifth Avenue, New York, N. Y. 155 North Wacker Drive, Chicago, Ill. SPENCER CHEMICAL CO. SOLVES PROBLEM:

Maintaining a controlled flow of liquid ammonia at high pressures, 24 hours a day...

At the Vicksburg, Miss. plant of Spencer Chemical Company, ammonia production demands two things of pumps: (1) 24-hour, 7-day-week operation and (2) continuous flow of controlled volumes of liquid ammonia at high pressure.



How Spencer licked the problem: When Spencer started construction plans in 1951, company engineers specified two Aldrich Direct Flow, 3/4" x 3" stroke Triplex Pumps to be used for alternate 30-day periods. According to company spokesmen, nearly five years of service have proved these pumps to be efficient and capable of durable service.

Results: Dependability and freedom from trouble in all phases of operation. The Vicksburg Works Maintenance Superintendent tells us: "The Aldrich Pump is an excellent unit. Valve life is excellent and packing life exceptionally good."

We'll be glad to send you full information on Aldrich Pumps. Simply write Aldrich Pump Company, 3 Gordon Street, Allentown, Pa.

the toughest pumping problems go to



PRODUCTION

Dust Collector: Three new, compact Type M dust collectors are offered by The Kirk & Blum Mfg. Co. (3100 Forrer St., Cincinnati). Units have centrifugal precleaner, steel-wool filter pads for final cleaning. Dust receptacles are gasketed drawers. Capacities: 450, 900 and 1,800 cfm.; largest unit is 26 x 40 x 72½ in.

Cryogenic Pumps: Four lines of standardized pumps, adaptations of the firm's regular pump lines, are now offered by Byron Jackson Pumps, Inc. (P.O. Box 2017-A, Terminal Annex, Los Angeles 54), for pumping liquid oxygen, nitrogen, methane and other fluids at temperatures below —320 F. Pump types and maximum capacities: VMT—vertical, 15,000 gpm.; Hydropress—vertical, 2,000 psi., 650 gpm.; SM Process—horizontal, 500 psi., 5,000 gpm.; Bilton—horizontal, self-contained motor, 60 hp.



UPI PHOTO

Missileer's Safety Suit

For improved protection of missiles-servicing crews, the Army's Quartermaster Research & Engineering Command (Natick, Mass.) has developed this novel protective suit. Impervious to liquid oxygen, hydrogen peroxide, red fuming nitric acid and other missile-fuel chemicals, it is made of a resin-modified butyl rubber on a cotton-fabric base. Test quantities of the suit have been made by the command, U.S. Rubber Co. (New York) and Hodgman Rubber. Co. (Framingham, Mass.).



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(inserted)





More and more petroleum and chemical companies are specifying Tri-Sure* Closures for their whole line of steel shipping containersfrom 1 gallon cans to 55 gallon drums.

For your drums, get the security of Tri-Sure's leak-proof, tamperproof flange, plug and seal-the best protection you can buy.

For your pails, specify Tri-Sure Closures for Light Containers installed by the filler after the containers are filled. By using Tri-Sure "Clinch-On" Assemblies, fillers may select one of more than 24 varieties for application to the one standard "Clinch-On" opening.

Let Tri-Sure Closures improve your packaging . . . protect your products, help your selling. When you order drums, pails or cans specify "Tri-Sure Closures."

> *The "Tri-Sure" Trademark is a mark of reliability backed by over 35 years serving industry.

















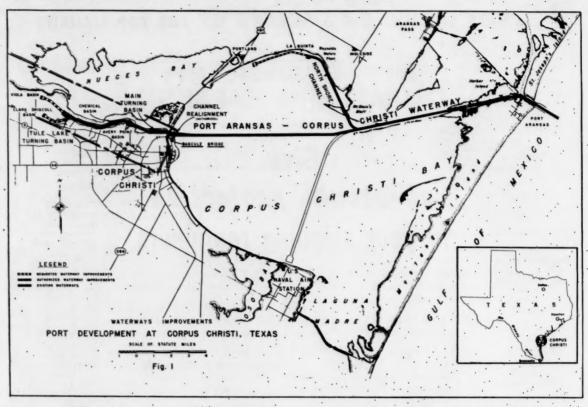
quality protection uality products



AMERICAN FLANGE & MANUFACTURING CO. INC., 30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y. CHICAGO, ILL. . LINDEN, N. J. . NILES, OHIO

> Tri-Sure Products Limited, St. Catharines, Ontario; Canada Tri-Sure S/A Indústria e Comércio, Sao Bernardo Do Campo, Estado de Sao Paulo, Brazil American Flange & Manufacturing Co. Inc., Villawood, N. S. W., Australia Compañia Mexicana Tri-Sure S. A., Naucalpan, E. de Mexico, Mexico B. Van Leer N. V., Stadhouderskade 6, Amsterdam, Holland Van Leer Industries, Ltd., Seymour House, 17 Waterloo Place, Pall Mall S. W. I, London, England

ADMINISTRATION



Vast expansion at Port Corpus Christi (outlined in red, above) means improved shipping for these CPI

\$60-Million Corpus Christi Port

Last week, as the federal budget for fiscal '59 went into effect, chemical process company executives whose plants use Corpus Christi, Tex., port facilities had a \$2.1-million reason for being pleased. That's the sum earmarked in the budget for continuation of the port's eight-year, \$60.3-million expansion and improvement program.

Begun in '54, the program — financed partly by federal subsidies, partly by local revenue bonds — is designed to open the Corpus Christi harbor to larger ships and to make available 15 miles of additional ship-channel frontage to industry. At no comparable period in the port's 32-year history have so many improvements been under way, projected or just completed.

The program includes these projects under way or recently finished (see map): a \$9-million high-level vehicular bridge over the entrance

to the main port basin; a \$6-million highway-railway lift bridge across Tule Lake channel (when the two bridges are completed, the existing bascule bridge will be removed and the ship channel widened at that point); straightening of the dog leg in the channel outside the port entrance; construction of Tule Lake channel and turning basin, Viola turning basin and a 40-ft.-deep, 200-ft.-long channel connecting the two basins; deepening of the La Quinta channel to 36 ft. and widening to 200 ft. to accommodate Reynolds Metals' super orecarriers; construction of a chemical turning basin 38 ft. deep, 900 ft. wide and 1,800 ft. long (completed and paid for by Columbia-Southern Chemical Corp.); two cargo docks, one for bulk materials-handling and the other for dry cargo; a mechanical unloading tower moving on steel rails along the bulk-materials dock; a conveyor-belt system for stockpiling;

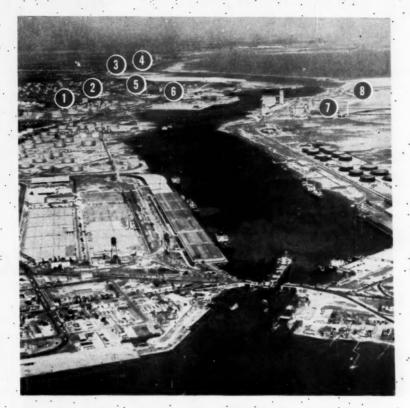
three shipside railroad tracks with storage tracks at both ends of the docks; a \$160,000 cargo-barge dock on the north side of the main turning basin; and two super-oil-tanker docks,

More to Come: Recently, the U.S. Army's Board of Engineers for Rivers and Harbors approved \$6.5 million worth of additional improvements for the port, including deepening the outer bar channel to 42 ft., and further widening and deepening to 40 ft. the channel and basins from Port Aransas to Tule Lake. This project is included in the current rivers-harbors omnibus bill, last week still awaiting the President's signature. Dredging of five miles of the waterway, at a cost of about \$1 million began in March, is scheduled for completion in November. The new (40ft.) depth will permit 45,000-ton tankers to use the port.

The fiscal '59 federal budget includes appropriations of \$430,000 for

- 1 Great Southern Corp.
- 2 Taylor Oil & Gas Co.
- 3 Columbia-Southern Chemical Corp.
- 4 Corpus Christi Refining Co.
- 5 Pontiac Refining Co.
- 6 Sinclair Refining Co.
- 7 National Lead Co. (Baroid
 - Sales Division)
- 8 Columbia-Southern's Shell

Terminal



concerns and others along the Aransas-Corpus Christi waterway. Eight-year program costs \$60 million.

Improvement Benefits CPI Firms

rerouting the Intercoastal Canal through Aransas Pass, \$800,000 for widening and deepening the main ship channel and \$915,000 for construction of the Tule Lake highway-railway bridge.

All-Channel Program: But chemical process companies right in Corpus Christi aren't the only Texas chemical firms destined to benefit from large-scale harbor improvements.

In February, an \$18.9-million long-range improvement program for the Houston ship channel was approved by state and federal officials. The program calls for deepening the channel from 36 ft. to 40 ft., easing of a number of channel bends and digging of a second turning basin at Clinton Island. Under consideration are improvement of the barge channel at Five Mile Pass and elimination of Turkey Bend in Buffalo Bayou, upstream from the turning basin.

Already under way or completed

are Houston port improvements totaling \$12 million (CW, March 16, '57, p. 38).

At Freeport, Tex., a \$1.5-million Brazos Harbor terminal is scheduled for completion next year. Dow Chemical Co. and the Brazos River Harbor Navigation District Board worked out an agreement whereby Dow—by making an advance payment on its terminal charges—will back up revenue bonds to the extent of meeting any deficit that might arise.

New dry-cargo docks have been proposed for Texas City to replace those destroyed in the '47 disaster. This plan includes creation of a navigation district. The full \$4.5 million for this would be financed through revenue bonds. Some Texas City industrialists oppose this plan of financing the rebuilding project, however.

The Port of Beaumont has under consideration future expansion of the 30-acre Harbor Island in the Neches River. Started last year was maintenance dredging of the Sabine River deepwater channel to ensure a minimum depth of 30 ft. along its 11-mile stretch. The shallow river channel last year cost the Orange County Navigation and Port District an estimated one-half of its expected port business, partly because of diversion of methanol loading to Port Neches, nearer the river's mouth. This happened when charter tanker operators declined to go to Orange after several ships had grounded in the channel.

The Port of Galveston is undergoing a \$2.4-million dry-cargo-pier rehabilitation program. In addition, bulk-handling equipment is being installed at a cost of \$1.6 million. Chemical liquids aren't shipped from the port to any significant degree, but shipments by Texas Gulf Sulphur Co. have helped the port to become the world's foremost handler of sulfur.

News triggers chemical processing progress

The chemical processor finds himself in one competitive race after another. The starting gun is usually a short news flash that comes from the developmental chemist. And the winners are those that respond first to the report. News-conscious processors have found it's just as easy . . . and a lot more profitable . . . to keep ahead as to catch up. This series of reports is designed to make it easier for chemical processors to keep ahead.

You	may	wish	to	che	ck	ceri	ain	ite	ms
în ti	nis a	dverti	sem	ent	ar	nd f	orwi	ard	to
thos	e cor	ncerne	d i	n yo	our	con	pai	ny.	

Route to

BIG BOOM FOR BROMINE!

Photography's key chemical focuses on safety, protection from radiation, algae control

An eight-foot thick window of zinc bromide solution is as effective a radiation barrier as a similar thickness of concrete—yet it is as transparent as a living room window! Bromine windows block gamma rays, offering atomic scientists a safe view of radiation-filled laboratories, observation posts and detonation stations. The transparent shield? Zinc bromide solution, optical grade. The ability of the solution to transmit light in a straight line and at the same time hold back gamma rays made it the natural choice for these "windows of the atomic age."

This is just one example of how Dow has helped processors discover the profitable uses of the first product ever extracted from Midland's brine—bromine. To keep pace with the growing need for bromine and brominated products, Dow has expanded its 1899 group of 14 products to today's farreaching 110.

In photography, bromine has long been a key chemical building block in practically every picture ever taken. It has helped movies move from the silent days to today's wide screens. It makes possible the prints that hang in salons . . . or are pasted in family albums, and is also at work in x-ray



Special zinc bromide window holds back gamma rays giving scientists safe, undistorted view of nuclear experiments.

and photoengraving.

Algae control, another new bromine area. A large southern textile mill recently launched a new program of effective control of stubborn algae in vital processing water by using bromine. The petrochemical industry is also awakening to the potentialities of algae control with bromine in its cooling towers. This is particularly effective when the algae and slime have built up a resistance to chlorine.

Plain horsepower is just as important as atomic power to the average motorist. And bromine is helping him get more pep and power from his high compression engine, thanks to still another bromine compound, ethylene dibromide. By solubilizing the lead in gasoline additives, this bromine product prevents damaging engine deposits from stealing power from modern car engines.

From the millions of pounds of brine processed by Dow each day come huge supplies of high purity bromine. Just as ample is the Dow stockpile of information and know-how that has been building up since the first pound. of bromine was produced in 1897. Over sixty years of experience have made Dow the surest source of bromine—likewise the best source of profitable information about its background and future for processors.

Processors



ETHYLENE AMINES

Purer products from purest ethylenediamine—98%! 3 higher amines—DETA, TETA, TEPA—offer profit opportunities as intermediates.

NOW

Pharmaceutical Bromides on Prescription!

Medicine has come a long way since the 1890's. And a lot of the wonder drugs prescribed and dispensed today are the healthy result of teamwork between the pharmaceutical manufacturer and the producer of basic chemicals.

The imposing list of important intermediates offered today by Dow, for example, started with the first bromine produced by the company before the turn of the century. Now, pharmaceutical houses get their bromine compound requirements filled at Dow exactly to their prescription. "They're the doctors," a Dow research chemist said of the company's pharmaceutical customers. "They send in the prescription. We fill it."

This "on order" service is made possible by a new multipurpose plant designed specifically for serving this important field. A major product of this new plant is satisfied customers. Like the manufacturer who recently indicated: "It's been a big help to us, getting the pharmaceutical or chemical intermediate we need."

Working with the nation's pharmaceutical houses, Dow research has provided the many intermediates needed for antihistamines, sulfas, and antibiotics. Ethyl bromide, trimethylene chlorobromide and phosphorous tribromide are only three of the many compounds now available.

* * * *

If you aren't already profiting from these and other Dow chemicals, we suggest you write for complete information to THE DOW CHEMICAL COMPANY, Chemicals Sales Department 752B, Midland, Mich.



Biochemists experimenting with poultry use chelating agents to remove dangerous radioactive contamination from blood stream.

CHELATION

lon tamers perform wonders with profits!

"Development of chelating agents for use in chemical processing is one of the most important advances in chemistry in recent years." These recent words of the research and development manager for a large synthetic rubber manufacturer serve as a commencement address for chelation's

graduation to a full-fledged chemicalprocess—one of the most promising in chemistry.

Child prodigies in chemistry, chelating agents already are performing mansize jobs in processing. In the manufacture of synthetic rubber, they grasp unruly metal ions like a fistful of marbles—shooting them slowly into the polymerization process to make each rubber recipe turn out just right.

Chelating agents are keeping liquid soaps from clouding, cleaning up dangerous radioactive contamination and softening processing water. All because of one remarkable ability . . . to search out, encircle and hold metal ions in solution. This dramatic performance . . . which can save a citrus grove from dying of iron starvation or eliminate a manufacturer's processing problems . . . means new profit possibilities.

In the last four years, Dow (a major producer of chelating agents) has been instrumental in bringing about a two-fold reduction in the cost of chelating agents. These products, manufactured under the trademark Versene®, are now well within the reach of any processor with metal ion problems.

DOW CHEMICALS basic to the chemical processing industry

Alkylene Oxides • Glycols • Industrial Preservatives • Polyalkylene Glycols
Glycol Ethers • Alkalies • Phenolic Compounds
Brominated and Chlorinated Aliphatic Compounds • Inorganic Acids
Halogens • Organic Acids and Esters • Inorganic Chlorides
Bromides and Bromates • Nitrogen Compounds • Amino Acids • Glycerine
Salicylates • Phenyl Phosphates • Heat-Transfer Media
Flotation and Flocculating Agents • Chelating Agents • Ion Exchange Resins
Methylcellulose • Magnesium • Plastics • Aromatics

YOU CAN DEPEND ON



are tapping the profit potential in these ...



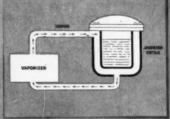
INDUSTRIAL GLYCOLS

Demand continue, to grow for Dow's wide line of industrial glycols as intermediates for polyesters and urethanes. Send to Dow now for information.



SODA ASH

Dow production facilities are a boon to Gulf Coast area users. You'll find the complete story in Dow's Soda Ash Handbook. Write today for your copy.



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Most practical heat-transfer medium for 400-750°F. range. Let this organic medium profitably, safely, replace your direct fire systems.



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Whatever your industry, whatever your need in stearates, you will fill them best—fill them fast—through Metasap. Write for full information about our full line of metallic soaps. Our Technical Service Department will gladly make recommendations based upon your specific requests. Metasap Chemical Company, Harrison, N.J.



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Antitrust Decision Relaxed

Foreign affiliates of Du Pont and Imperial Chemical Industries Ltd. (London) have been given the goahead to be agents for one another in the sale and distribution of goods abroad. This is the gist of a recent ruling by federal Judge Sylvester J. Ryan, U.S. district court (New York).

The ruling, in response to Du Pont's application for a construction order, clarifies a '52 antitrust judgment prohibiting Du Pont from making agreements and arrangements not only with ICI but also with Remington Arms and its or ICI's affiliates.

In its application, Du Pont said an order freeing its foreign subsidiaries from the '52 ruling was necessary and proper. It cited as an example the plight of its Canadian subsidiary, Du Pont of Canada Ltd. The subsidiary, because it lacked the sales and distribution setup for certain by-products of its explosives operations, was un-

able to economically market sulfuric acid. A simple solution was to sell the acid through the nearby Canadian subsidiary of ICI, Canadian Industries Ltd. It appeared, however, that the '52 judgment had prohibited such an arrangement.

Judge Ryan held that the questioned section of his original judgment was inapplicable as long as the agreement was between foreign subsidiaries of the two companies and involved only foreign commerce.

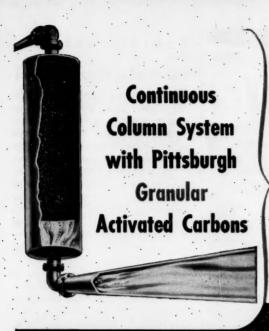
The government objected to Du Pont's application, contending that products involved in such an agreement might eventually work their way into U.S. domestic commerce. Judge Ryan said he could not base his ruling on such an eventuality, added that he doubted that Du Pont would permit any agreement that would cause a competitive product to be imported into this country.



Babies Welcome at Plant Open House

Allied Chemical's Solvay Process alkali plant in Syracuse, N.Y., set a new attendance record at its regular open house recently—and baby sitters made it possible. Until this year, most mothers of small children couldn't find free time to make the

open-house visit. So this year, a nursery was set up in the administration offices to harbor the kids while Mom saw where Dad works. Some 600 children of preschool age were cared for by women of the Solvay guild, an organization of wives of personnel.



- 1. Greater capacity, lower carbon dosage, lower cost
- Higher product quality, better colors, higher purity
- A clean, continuous operation—no intermediate handling
- 4. Less equipment—less maintenance required

Mr. Processing Engineer:



Batch Type Operation with Powdered Carbons

- Low efficiency—high carbon dosage—high labor cost
- Requires slurrying and filtering, with filter cake retention loss
- Creates dusting problems and high maintenance costs



Want More Information? Send for this Booklet

There's a type of Pittsburgh Granular Carbon ideally suited to solve your particular adsorption problem. Write for folder describing Pittsburgh Activated Carbons in both liquid and vapor phase applications . . . it's free.



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STRATEGICALLY LOCATED bulk distribution points and service offices throughout the country assure you of fast delivery in tanker, barge, tank car, tank truck and drums.

CSC is one of the largest producers of methanol in the world. Come to CSC for dependable long-term supply for whatever quantity you need. CSC methanol is marketed at a **minimum** purity of 99.85% — one of the highest purities known for a bulk chemical. You can't get better quality — or service — anywhere!

CSC CHEMICALS FOR INDUSTRY

ALCOHOLS .

Methanol Butanol Ethyl Alcohol

AMINES AND AMMONIA

Ammonia, Anhydrous and Aqua Ammonium Nitrate, Solid and 83% Sol. Methylamines Benzyltrimethylammonium Chloride

Hydroxyethyltrimethylammoniumbicarbonate

ESTERS

Amyl Acetate Butyl Acetate
Butyl Lactate Butyl Stearate
Dibutyl Phthalate Ethyl Acetate
Tributyl Phosphate

NITROPARAFFINS

Nitroethane 2-Nitropropane
Nitromethane 1-Nitropropane
Alkaterges Diamines
Aminohydroxy Compounds
Nitrohydroxy Compounds
Chloronitroparaffins

PHARMACEUTICALS, BULK

Bacitracin Cycloserine Riboflavin, U.S.P. and U.S.P., R.S.

OTHER CHEMICALS

Acetone Formaldehyde Pentaerythritol

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ADMINISTRATION

Kanawha Grad School

A plan to bring graduate study facilities close to an area of industrial activity is rapidly crystallizing in West Virginia's Kanawha Valley—location of one of the chemical process industries' largest production complexes.

The project is West Virginia University's Graduate Center, a part of West Virginia University. It will offer curricula of 30 hours' graduate credit per semester leading toward Master of Science degrees in chemical or mechanical engineering or a Master of Science degree with a major in chemistry. Tuition will amount to \$50/semester credit hour.

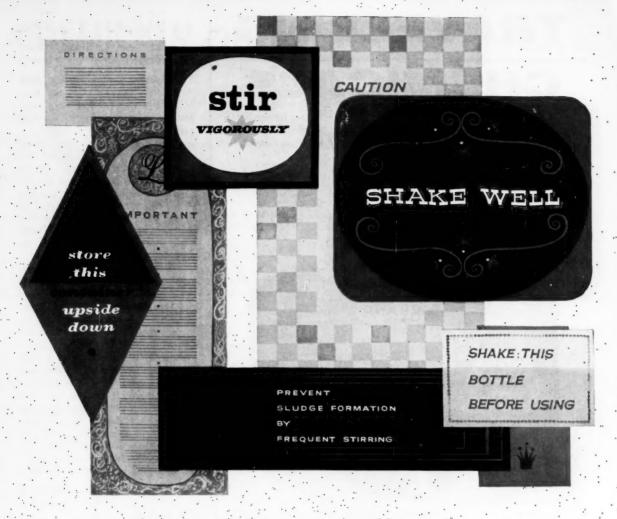
The school will be located—at least temporarily—in the university's Science Hall, at Institute, an existing three-story brick building that is already a part of the campus. First classes will begin in September, running two nights weekly for two periods from 6 to 10 p.m.

Self-Supporting: The school will be self-supporting from tuition fees and donations, with an operating budget estimated at \$75,000/year. According to estimates made from a survey some time ago, at least 600 people have indicated an interest in taking such graduate-level courses. Fall enrollment will be about 240.

The idea to have such a school has been under study for some time. A special committee made up of members of the Kanawha Valley section of American Chemical Society, the Charleston section of American Institute of Chemical Engineers and the West Virginia section of American Society of Mechanical Engineers began the initial surveys.

It's expected, of course, that many students will come from the ranks of chemical companies operating in the area. Also, it seems likely that some support will come from these companies through traditional welfare plans, whereby companies pay a portion of tuition for employees who are taking courses that are related to their work. Some observers report that a number of companies also will contribute directly to the school through pledges of financial assistance.

Acting director of the new school is Professor Charles B. Seibert, of West Virginia University's Dept. of Electrical Engineering.



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ceuticals...dry cleaning fluids...to prevent fouling in reboilers and other processing equipment.

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ADMINISTRATION

LEGAL

Companies Lose Pollution Suits: American Cyanamid Co. and Food Machinery & Chemical Corp. have lost in court decisions in unrelated pollution suits.

Cyanamid has served notice of appeal from a verdict rendered last week in U.S. district court (Ft. Worth; Tex.). The verdict awarded \$34,431 to a local farmer and five members of his family on the grounds that the Trinity River bottomland they farmed was rendered worthless by salt solubles allegedly discharged into the river by the Cyanamid plant.

In Charleston, W.Va., the state supreme court, setting aside lower court decisions, awarded \$285.60 to two men for damages to their cars, allegedly caused by caustic soda escaping from an air duct at the South Charleston plant of FMC's Westvaco. Division (CW, June 29, '57, p. 54).

The men were among 15 Westvaco employees who brought suit to recover damages. Their cars had been parked in an employee parking lot. In April '53, a Kanawha County court overruled a magistrate's court and found for the company. After the circuit court refused a writ of error. the two men appealed to the state supreme court. ::

LABOR

Union Merger: Oil, Chemical & Atomic Workers Union has asked Chemical Workers International Union to hold exploratory meetings in mid-August looking to a possible merger. The issue of merger between the two biggest unions in the chemical industry has been mentioned frequently in the past but formal discussions have never taken place.

OCAW President O. A. (Jack) Knight says his union is "ready and willing to endorse the idea of putting all chemical workers in one union, to discuss merger and to accomplish merger if this can be done on a basis pleasing to the membership of both unions.'

In a letter to ICWU President Walter Mitchell, Knight again named a committee to represent OCAW in the hoped-for meeting with a similar committee to be appointed by Mitchell. The Knight committee is composed of himself and his three



This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

NEW SOUTHERN ETHYLENE OXIDE PLANT COMPLETED

Wyandotte's new Geismar Works, immediately south of Baton Rouge, Louisiana, is now on stream. Completed: a multi-million-dollar ethylene oxide plant with an annual capacity of 60 million pounds.

This new facility establishes Wyandotte as a merchant producer of ethylene oxide represents our diversification as a multiplant supplier of ethylene glycol and diethylene glycol . . . and strengthens our position as a manufacturer of many structurally unique polyoxyalkylene glycol polymers.

As for the installation itself . . . Wyandotte is using a new process for the direct oxidation of ethylene to ethylene oxide — the first of its kind in the U.S.

Wyandotte boasts a long background in ethylene oxide chemistry, having made it for captive use since 1948 . . . and has carried on an extensive research program on oxides. This familiarity equips Wyandotte to handle a wide range of customer problems.

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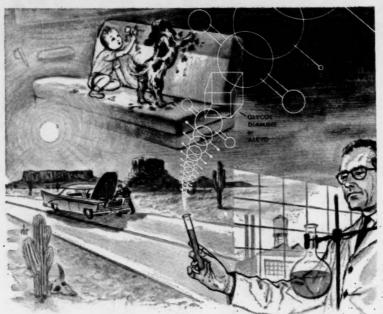
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ADMINISTRATION

top union officers — Vice-President Elwood Swisher, Vice-President B. J. Schafer and Secretary T. M. Mc-Cormick. ICWU is reported to have encountered difficulty in establishing a comparable committee because it has more officers.

High-Energy Strikes: Members of Oil, Chemical & Atomic Workers Union locals at the Olin Mathieson Chemical Corp. plants at Niagara Falls, N.Y., have been undecided whether to extend the provisions of their present contract concerning insurance benefits or to strike for additional benefits. Two of the local units of OCAW-at the main plant and at the research plant - have signed contracts to extend present provisions for one year. But at two other plants-one is the Navy-owned high-energy fuels plant-pickets were still out front last week. Wage provisions of the four contracts are not due to expire until June '59.

KEYCHANGES

Gregory S. Coleman to vice-president and director, Alloys Unlimited (Long Island City, N.Y.).

C. C. Brumbaugh to vice-president, Diamond Alkali Co. (Cleveland).

Corneille O. Strother to vice-president—research, Union Carbide Nuclear Co., division of Union Carbide Corp.

James W. Nelson to president, newly formed Crescent Biological Laboratories Corp. (Brooklyn).

Donald V. Sarbach to director of new product development, Goodrich-Gulf Chemicals (Cleveland).

Ronald R. Menti to general manager, Latex Fiber Industries (Beaver Falls, N.Y.).

George T. Deck to vice-president and technical general manager, and Howard E. Kremers to vice-president — market development, Lindsay Chemical Division, American Potash & Chemical Corp. (West Chicago, Ill.).

J. Justin Basch to marketing vicepresident, Oakite Products (New York).

Frank Aten to operating manager of chemical manufacturing, Abbott Laboratories (North Chicago, Ill.).



dimethyl phthalate
diethyl phthalate
di-(methoxyethyl) phthalate
di-isobutyl phthalate
di-isobutyl adipate
dibutyl phthalate
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RARE EARTHS SERVE YOU EVERY DAY

A variety of common uses of these unique materials

a report by LINDSAY

We've often suggested on this page that you might find interesting and profitable uses for the rare earths in your manufacturing processes. Here are some of the common but none-theless exciting applications of rare earths.

Shorp News FROM Kodak

If you are a camera fan, you've probably heard about rare element glass developed by Eastman Kodak. It is called "rare" because it contains, among other things, lanthanum which is one of the rare earths.

Kodak utilized the principle that rare earth glass has a very high refractive index in relation to its dispersion. It, therefore, bends light more and spreads colors less. This permits production of lenses with shallower curves and, consequently, less inherent aberration. The result: higher quality lenses with fewer glass parts.

Rare element glass was perfected by Kodak for high precision military needs during World War II. The exciting part of the story is that Kodak's optical engineers have now found a way to produce rare earth element glass lenses in quantity at greatly reduced costs. That's why today you can get so fine a precision Kodak lens so economically.

Next time you get color slides with beautiful, needle-sharp images, shot with your favorite camera (Kodak, of course), you can thank the imaginative engineering of the people at Kodak... and think, too, of the amazing versatility of the rare earths.

IF YOU WEAR GLASSES

Chances are that your glasses were polished with ceria, a rare earth oxide preferred by many of the better optical firms. Cerium oxide is also widely used to polish high precision optical instruments, mirrors and other glass specialties. Speaking of versatility, certain of the rare earths are used to decolorize glass; others add the lovely, delicate colors so many people like in fine glassware.

HAVE A LIGHT

Top quality lighter flints are made of misch metal (an alloy of mixed rare earths). Rare earth metals are also used to create better alloy steels and magnesium alloys for high temperature service.

OUT OF

Thorium, intimately associated with the rare earths, is literally out of this world – in the outer atmosphere! For thorium is an essential metal in the

production of the alloy skin of the third

stage of a rocket. Thorium has unique qualities which make it possible to produce a thorium-magnesium alloy which does not burn up at the fantastic speed of the rocket—up to 18,000 miles per hour.

AND A FEW MORE

More perhaps than you have suspected, you enjoy every day the benefit of the truly remarkable qualities of rare earths. They are used in the production of such widely diversified daily essentials (to name only a few) as movie projectors, textiles, ceramics, paint, TV picture tubes, petroleum, chrome plating, electrical resistance alloys, pharmaceuticals, ink, X-ray machines. Does all this give you an idea you can explore in your business?

THIS IS THE "COMMERCIAL"

As the TV announcer says, we pause for a brief announcement. If you are thinking about the possibility of using rare earths, even in the high purities, don't worry about availabilities. Most of them are available for prompt shipment in quantities of an ounce to a carload. How much do you need? Even more important, prices have been sharply reduced during recent years. You'll find the rare earths economically practical . . . and wonderfully useful.

So here's ample evidence that rare earths touch you in some way virtually every day. Certainly they are worth your own critical investigation. What helpful information would you like from us — today?



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SPECIALTIES



Shawinigan's Cooper (left) and Bromley: To make your own PVAc emulsion, just add water.

Pioneering the 'Instant' Emulsion Market

Sporting a brand-new price tag, spray-dried polyvinyl acetate emulsions set out in search of volume outlets last week. Shawinigan Resins Corp., which sliced prices by as much as 7¢/lb. (CW Market Newsletter, July 5), has high hopes that the cuts will give the still-developmental products broader appeal for a host of potential purchasers.

Interest in the new materials, says Shawinigan product development director James Cooper, has been brisk since their debut last fall. At that time, brief published reports of their availability (CW, Sept. 7, p. 41) evoked a heavy stream of requests for sample quantities and further information. Many of these nibbles were forerunners of more substantial orders. The level of inquiries and sample orders, says Cooper, still is running high.

Producers of building products take most of the spray-dried emulsion and probably are the best potential volume customers. The product is finding its way into industrial paints, portland cement paints, joint cements, tile grouts and other specialty cements. It is reported to improve the flexibility, tensile strength, water and abrasion resistance and curing characteristics of these materials. In paints, it is said to markedly enhance pigment bonding and surface adhesion.

That polyvinyl acetate could do some of these things isn't news. PVAc emulsions—in the building field, at least—suffer from the simple handicap of being liquids. The big selling point of the dried emulsion is convenience. Formulators can offer a one-package (all dry) system instead of a two-package (e.g., cement and liquid emulsion) product. The former precludes problems (e.g., freezing, can corrosion) of liquid packaging, is easier to use—add water and emulsion is reconstituted at point of use.

New dry-mix adhesives are a possibility for application of the dried PVAc emulsion. Adhesives producers could put up a dry dextrin-resin mixture for envelope makers. Most of the latter now buy dextrins and liquid resin emulsion, formulate their own adhesives.

Corrugated cardboard box manufacturers, who won't buy anything but dry adhesive ingredients, are interested in the dried PVAc emulsion as a partial replacement for the polyvinyl alcohol they now use.

Producers of paints and adhesives, moreover, can use the dried PVAc to boost the solids content of liquid emulsions used in their products. Object: to reduce drying time. Other possible uses: as water-dispersible binder for insecticides, binder in non-woven fabrics; ingredient of dry emulsion paints.

Two companies—Shawinigan and Colton Chemical Co. (division of Air

Life on the Chemical Newsfront

A NEW GUIDEBOOK FOR CHEMISTS who want to explore the vast chemical resources of calcium cyanamide is now available. Cyanamide, an exceptionally reactive intermediate, has the unusual ability to react now like an organic chemical, now like an inorganic. Starting point for hundreds of useful compounds—biologicals, steel additives, leather softeners, silver cleaners, insecticides, textile resins, paper resins, coating resins, plastics—its potential still remains largely unexplored, a constant challenge to the chemist's ingenuity. A copy of this 122-page source book, the most comprehensive ever published, will be sent on your request.

(Industrial Chemicals Division)

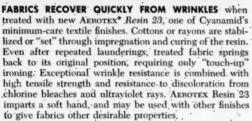




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(Organic Chemicals Division)





(Organic Chemicals Division)

PHOSPHORIC ACID IS NOW ON TAP at Cyanamid's new triple superphosphate plant at Brewster, Florida: A wet process phosphoric acid—54% P₂O₅— it offers the fertilizer industry an economical way to produce high analysis mixed goods using less expensive nitrogens and less sulfuric acid in processing. It will enable fertilizer manufacturers to meet farmers' constantly increasing demands for high analysis plant food. Further information is available on your request.

(Agricultural Division)





NEED A GELLING AGENT? Gels from low viscosity systems can now be produced by AM-9* gelling agent. AM-9 forms a nonviscous solution in water. After the addition of a catalyst, the solution gels in a predetermined period of time which is controlled by the amount of catalyst used. Viscosity of the solution remains essentially that of water until just before the gel is formed. In the example above, sand is being added to AM-9 to illustrate this effect. The gel formed is insoluble in water, organic solvents and alkali. The AM-9 gel is impermeable to water and most organic solvents. The gel is resistant to fungal attack and is mechanically stable in contact with water. We will be glad to send a technical bulletin on your request.

(Market Development Department)

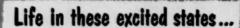


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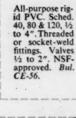


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SPECIALTIES

Reduction Co.)—now produce just about all the domestic (the Germans make some) spray-dried PVAc currently available in commercial quantities. Unlike Shawinigan's offering, Colton's product is not 100% polyvinyl acetate. Colton President Bernard Kraskin contends, however, that these materials are sold on the basis of performance, not composition.

Borden Co. is offering experimental quantities of dried PVAc emulsion, and National Starch Products has a dried PVAc emulsion in field trial. Du Pont, Celanese, Union Carbide and Dewey & Almy Chemical Co. (a division of W. R. Grace and Co.) are not offering spray-dried PVAc, although some—if not all—of these firms have done developmental work on such materials.

Shawinigan's research on spraydried PVAc emulsions dates back about 10 years. Getting a dried emulsion that could be reconstituted by the addition of water is a lot easier in theory than it is in practice. Equipment innovations (e.g., in the drier nozzle) plus careful control of temperature and other process conditions proved to be the answer. Shawinigan's work has resulted in U.S. patent 2,800,463; British patent 753,173; and Australian patent 211,457. A Canadian patent has been applied for.

Shawinigan's market director William Bromley has over-all responsibility for commercial development of the products.

How Colton's process differs from Shawinigan's is not known. Kraskin says, "Our product and process are outside the scope of the Shawinigan patents." Colton has applied for patents on product improvements.

Although their potential is sizable, dried emulsions will never capture the lion's share of the 150-million-lbs./year PVAc emulsion market. Cost is the handicap. At 47¢/lb. (f.o.b. Springfield), the new Shawinigan truckload price, spray-dried emulsion is substantially more expensive than liquid emulsion at 18¢/lb. (55% solids). The customer pays about 32¢/lb. for the solids he gets in the liquid product. The dry material allows freight and storage economies, of course, but they don't offset the essential cost difference.

The dried emulsion will find customers among those willing to pay a premium for advantages.



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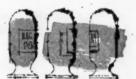


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don't find them, check with us . . . we'll do our best to satisfy any reasonable request concerning lithium compounds. And for the latest in lithium technical data, be sure to send for your copy of "Chemical and Physical Properties of Lithium Compounds"—an earthy collection of facts and figures on some 23 compounds. Address request to the Technical Literature Section, Foote Mineral Company, 420 Eighteen West Chelten Building, Philadelphia 44, Pa.



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Glenn Again

Glenn McCarthy, the flamboyant oil man, may have struck another gusher. He's in oil again—this time medicinal oil. Along with two friends, McCarthy has put up \$750,000 to help finance Rich & Co. (Houston, Tex.), which manufactures a burn remedy, Rich Oil, and another product called Salcolan.

McCarthy, who hopes to turn the two-year-old company into a major pharmaceutical firm, told CW "I became interested in Rich Oil through a family doctor. This man and his father before him had taken care of me and my family for many years -he had treated us ever since hestarted out on his own. In addition. we were socially friends. During a family dinner party he chanced to mention Rich Oil and what a remarkable job of medication it did for serious burns. Shortly after that chance conversation, a severe burn case came up and he showed me what Rich Oil did for the patient."

Checking further, McCarthy found that the manufacturer of the oil needed financial aid. Along with Frank Waters of Houston and Ray Ryan of Evansville and California, McCarthy rounded up almost a million dollars to help the company.

The burn remedy contains cod liver oil, phenyl salicylate, lanolin, caraway oil and virgin olive oil. It's intended for severe burns caused by fire and steam and chemicals—even "floor" burns or rope burns. "It's also excellent for abrasions," according to McCarthy.

Officers of the company are 75-year-old E. Rich, who is the chairman of the board (and developer of Rich Oil), George L. Asbeck, president and treasurer; Willett Alsworth, Jr., vice-president; Richard E. Rolle, vice-president; and Wm. B. Butler, secretary. The company's stock is closely held; none is for sale.

PRODUCTS

Glossier Interiors: Britain's Imperial Chemical Industries, Ltd., has developed two new alkyd resins for British makers of high-quality flat and semigloss interior decorative paints. Both vehicles are thixotropic. Although both contain the same semidrying, oil-modified alkyd resin, Modulac 135W is dissolved in ordinary mineral

spirits and Modulac 135WO in odorless white spirit. ICI says that heavily pigmented flat wall paints based on the new vehicles have good storage properties, solids won't settle out, and formulations have high resistance to flocculation.

Upgraded Flocculant: Dow is now making an improved polyacrylamide-type flocculant, Separan NP10. The new product, a refinement of its Separan 2610, is said to have higher purity, increased solution clarity and greater product uniformity than Separan 2610. All Separan 2610 production has been converted to Separan NP10.

Suntan Pills: Upjohn Co. (Kalamazoo, Mich.) is now offering a tablet to prevent sunburn and to speed suntanning. Active ingredient in the new tablet, tradenamed Meloxine, comes from the fruit of the Ammi majus (Linn), a relative of the parsley plant that grows along the Nile delta. Recommended dosage is two tablets/day, and, when used properly, Upjohn says that Meloxine protects redheads and blondes against sunburn, speeds tanning and, in most cases, provides a suntan of longer duration.

Etherized Starch: Morningstar-Paisley, Inc. is now making an etherized starch-resin finish for cotton and synthetics. The new finish is claimed to withstand repeated launderings even in solutions containing powdered bleaches.

Film Former: A new hydrocarbon resin emulsion for water-thinned paints, W-617, is now being marketed by Velsicol Chemical Corp. (Chicago). It's an anionic emulsion of a hydrocarbon copolymer resin, is said to provide both maximum binding properties and compatibility with the latex materials used in emulsion paints. The new product may be used as a complete vehicle or as a modifying agent.

Rust Preventer: Lehigh Chemical Co. (Chestertown, Md.) has developed an aerosol spray formulated to provide corrosion protection for all types of metal products and machinery. Lehigh says the new product, Anderol L-536, is nonflammable and nontoxic. A 16-oz. can retails for \$2.

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SPECIALTIES

Food Saver: Potassium sorbate, a water-soluble form of the fungistatic agent for foods, sorbic acid, is now being offered by Union Carbide Chemicals Co. It's designed to fill the needs of food processors requiring a fungistat that's more water-soluble than the sorbic acid. The new product is suggested for use in pickles, soft-drink concentrates, pancake sirups, fountain sirups, baked foods, fruit juices, jams, cheese and fresh foods. Price/pound in 10-lb. quantities is \$2.70.

EXPANSION

Polymer Emulsions: UBS Chemical Corp. (Cambridge, Mass.) is building a plant in Lemont, Ill., for the production of its line of Ubatol polymer emulsion and other products. Completion date: Dec. '58.

Drugs on the Farm

The magnitude of farmers' spending for drugs is pegged in a U.S. Dept. of agriculture report issued last week. The agricultural marketing service queried 3,985 farm families across the nation on their yearly health expenditures and came up with the following figures.

Total annual farm health spending of \$1,143,235,000 included \$137,870,000 for prescription drugs. This ranks just behind nonsurgical physician fees and hospital care among the 12 health items surveyed. Non-prescription drugs account for an additional \$39,800,000 and vitamins and mineral tablets account for \$25,419,000.

The South ranks high in purchases of both ethical and proprietary drugs, but trails far behind other regions in vitamin and mineral buying. The West Coast, on the other hand, has the highest percentage of families buying prescription drugs, vitamins and minerals, but is lowest in sales of nonprescription drugs.

Nationally, the survey found that 58% of farm families buy prescription drugs, 85% buy proprietary drugs and 29% buy vitamins and minerals.

The East North Central area (six states bordering the Great Lakes) has the smallest percentage (46%) of farm families buying prescription drugs, but ranks high in the two other categories, vitamins and minerals and nonprescription drugs.

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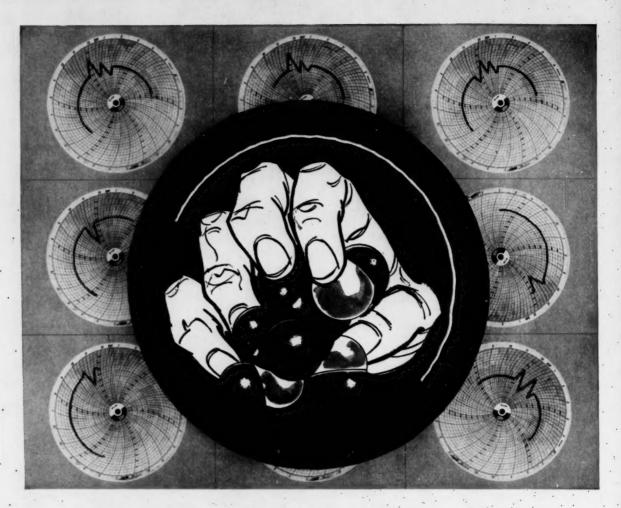


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Melman: What's Wrong with the Patent System

"The factors influencing industrial research activity are the changing circumstances of interfirm competition, much more than the availability of patents."

"Large firms, especially, have enjoyed advantages in their utilization of the patent system. This tactical use of patents as a control over the use of knowledge has been supplemented by management-operated security systems designed to restrict access to technical knowledge.

. . . While patents do play a role in interfirm competition, their aggressive manipulation has not been a necessary condition for business success, since firms that have pursued a 'low pressure' patent policy have also enjoyed much success."

"Business requirements for keeping knowledge secret block the free publication that is a necessary part of the process of inquiry."

"The effort to operate a patent system formulated for the technological conditions of a century ago has proved to be increasingly awkward."

—from "The Impact of the Patent System on Research,"
by Prof. Seymour. Melman.

Patent System-Roadblock to Progress?

Arguments that the American patent system is indispensable to industrial progress got sharp rebuttal this week in a just-released report (CW Technology Newsletter, July 5) prepared for the Senate Judiciary Subcommittee on Patents, Trademarks and Copyrights. The report even suggests dispensing with the patent system entirely.

Author of the report, "The Impact of the Patent System on Research," is Seymour Melman, professor of industrial engineering at Columbia University and occasional consultant to industry. He is one of a dozen patent authorities called in by Sen. Joseph C. O'Mahoney (D., Wyo.), chairman of the subcommittee that's now in the fourth year of a \$325,000 study aimed at getting the kinks out of the patent system.

Chemical process firms, which are included in Melman's study, are prov-

ing hard to convince, however. While the patent system has its critics in the CPI, there's little sympathy for its abandonment, as a CW industry check shows. And while some large firms—chief target of Melman's critique—disagree with him but won't comment in detail until they've studied the report further, others are quick to make a stand.

'Junk the System': Melman counsels that the patent system is endangering rather than helping scientific progress and is beyond repair. His major complaints are based on interviews with top managerial and research personnel at four large industrial laboratories—one each in the chemical, petroleum, electronics and transportation industries—and at several large nonprofit and university laboratories (none is identified). Melman claims that the four industry labs together account for 7% of the total U.S. industrial

research and development spending.

Among his salient arguments are

these:

- The patent system is geared to times past, when most industrial development stemmed from work by the solo inventor. Nowadays, discoveries usually come from a battery of salaried scientists and engineers, working together with elaborate equipment. It is almost impossible under present circumstances to identify, much less reward, the individual inventor. As a result, the patent system no longer serves one of its major functions—providing incentive to individual researchers.
- In the area of applied research and development, Melman believes that industry's use of the patent privilege is lagging far behind the increase in the volume of industrial research—and the number of people engaged in research and development. Rela-

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RESEARCH

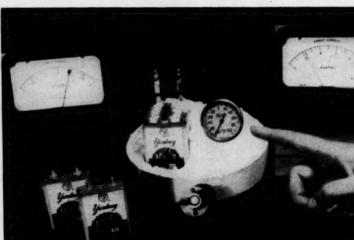
tively few basic research discoveries are patentable, he avows, and the scientists - mostly nonindustry - engaged in such research are motivated not for hope of profit but by a desire to pursue knowledge for knowledge's sake. Mainly, they are supported by universities or foundations and, increasingly, by government, whose discoveries are usually put in the public

· Large companies, which account for most of the new products coming from industrial labs, likewise find little stimulus for research in the protection of new inventions offered by patents. Melman argues that companies invest heavily in research principally for competitive reasons and to reduce the costs of their processing operations. As a result, they put a high premium on secrecy-making an effort to disclose as little as possible in patent applications and delaying the filing of such applications or publication in professional journals, sometimes for as long as four or five years after making a discovery. Moreover, he says, a large portion of useful discoveries are never sent to the Patent Office, again forestalling publication.

• Few patents-even when expired-contain enough information for a competitor to duplicate the product; he must go to the company originating the product for processing know-how-available at a price. Because manufacturing know-how is at least as essential as knowledge of the product itself and can be withheld from competitors, Melman concludes that the patent system also falls short of a major objective-wide dissemination of scientific information in a form useful to prospective competitors.

· Many companies gear their research programs to gaining comprehensive coverage of a relatively narrow area-giving wide berth to fields that competitors have already marked out. This encourages elaborate crosslicensing among competing companies, but not direct competition in research.

Admitting that Melman has made some points, few CPI research chiefs agree with his conclusions. For example, Leland White, director of U.S. Rubber's research and development program, told CW that he regards



New Battery for Cold Spots

Yardney Electric Corp. (New York) developed this new battery, called the Yardney Arctic, claimed to be a capable of supplying appreciable currents at temperatures below -65 F. It's usable from 200 F to -100 F, is intended for powering devices such as radio equipment. The cell is nonaqueous, has a calcium negative plate, silver chloride positive plate, contains an electrolyte in a solvent composed of acetonitrile, other nitriles and organic compounds. The battery is hermetically sealed.



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RESEARCH

patents as an incentive for early publication of research and "of enormous importance to the rapid advancement of technology in the U.S."

Interchemical's research director, Zeno Wicks, siding with White sees no need to drop the patent system, feels that its shortcomings should be corrected instead. Wicks suggests that an employee be allowed to register patents in his own name and not as an assignor to his company. He also objects to the proof of utility currently required for patents, argues that discoveries seemingly of no practical value at the time of patent application may prove of use later. Also, Wicks favors publication of U.S. patent applications.

Murray Berdick, research coordinator of Evans Research and Development Corp., also calls patents a stimulus to research, not a hindrance. Industry, he notes, publishes work in technical journals that it might not publicize if patents were not available as protection. He does see some weaknesses in the patent system—frequent "unreasonable" demands of the Patent Office, the high rate of invalidation of patents in federal courts—but not enough of them to warrant jettisoning the system.

Competitive Spur: Melman discounts the predictions of manufacturing executives that elimination of the patent system would lead to less research activity. He argues that companies must maintain heavy research budgets for competitive reasons alone. He points out that International Business Machines Corp. and American Telephone & Telegraph-Western Electric will step up their R&D spending now that the courts have forced them to license thousands of their patents to their competitors. But he concedes that elimination of patenting would mean more corporate secrecy about discoveries.

Melman complains vigorously of the harmful impact he sees in the growing commercialism of university laboratories, abetted by patent-license royalties. He fears this is diverting universities from their main responsibility, pursuing "the uninhibited inquiry needed to promote the flow of science."

In a foreword to the Melman report, Senator O'Mahoney carefully disassociates himself from Melman's conclusions. But in releasing the re-

port, the senator added: "It is worth noting that if the Melman conclusions are correct, the patent system is presented with both a challenge and an opportunity."

If chemical processors are convinced that the present patent system provides protection to research as well as products and processes, they must be prepared to protect the system itself.

Hindered Compounds: Pivalic acid and neopentyl alcohol are two new sterically hindered compounds available from Arapahoe Chemicals Inc. (Boulder, Colo.). These compounds, long known but commercially unavailable, are suggested for use indrug and related industries.



Chemical Drill

Tough, heat-resistant steel alloys can be "drilled" or "machined" using this experimental electrochemical setup at General Electric's engineering lab (Schenectady, N.Y.). Low-voltage electricity is passed through an electrolyte (e.g., hydrochloric, sulfuric, phosphoric, or hydrofluoric acid) which erodes the metal. There is no physical contact between the electrolyte-containing glass tube (above) and the metal surface. GE is now looking for practical applications of its new cutting technique.

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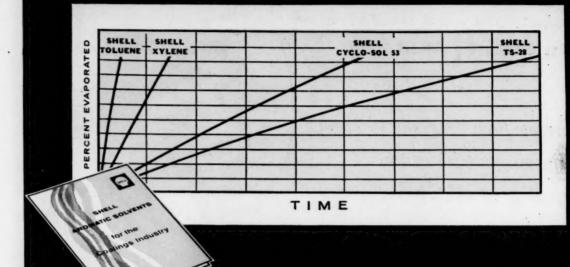
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Technology Newsletter

CHEMICAL WEEK July 12, 1958 Esso may soon commercialize its polyolefin process. Jersey Standard has had samples of polypropylene in the field for some time (CW, Dec. 7, '57, p. 32). And there's been small doubt in the trade that it would eventually build a full-scale plant. Recently a Houston paper reported that Humble Oil (largely owned by Jersey) has received the goahead to engineer a polyolefin plant at its Baytown site.

Neither Humble nor the parent company will say anything at all on the subject right now. But the betting is that very soon Humble or one of the other affiliated companies will announce plans.

Jersey is no stranger to petrochemicals, of course. And it has a long-standing interest in processes to make high polymers from olefins (e.g., it received one of the early—1940—patents in the field—U.S. Pat. 2,220,930). But its decision to exploit this work could herald a new, big, resourceful competitor in plastics for chemical companies.

Flame plating licks the wear problem on missile turbine shafts according to engineers at Rocketdyne division of North American Aviation, Inc., and Linde Co., division of Union Carbide Corp. The flame spray technique (CW, June 14, p. 49)—ceramic rod is fed into oxyacetylene flame directed onto surface to be treated—is used to put tungsten carbide on the turbine shaft (a component in the engines of the Atlas, Thor, and Jupiter ballistic missiles). This is followed by grinding and lapping the coating to a .0015"-.0025" thickness. The plated shafts have a life of over 5,000 seconds.

A method for sealing aluminum to high-tension electrical porcelain has been worked out at Westinghouse Electric Corp. (Pittsburgh). It reportedly requires no intermediate materials and no costly vacuum or atmosphere heat treatments. The trick is to bring molten aluminum of "fairly high" purity in contact with the porcelain which is at a high temperature. Temperatures and holding time are critical, depending on the composition of the porcelain. Rates of heating and cooling are also important in preventing damage to the porcelain and achieving the right aluminum grain structure. Westinghouse says the seal, sull a laboratory development, is "mechanically reliable" and vacuum-tight.

The Russians have a new fluorine-containing plastic, for high-temperature wire insulation, and a type of nylon which uses ethylene as the starting material. These and other signs of Soviet plastics progress (see page 21) were turned up by Herman Mark, director of the Polymer Research Institute of the Polytechnic Institute of Brooklyn, during his just-completed tour of scientific institutions in the Moscow and Leningrad areas.

Technology

Newsletter

(Continued)

Clean H-Bombs may be used to clear a 300-ft.-deep harbor on the ice-blocked shore of northern Alaska (see also p. 23). Monsanto Chemical Co. (St. Louis, Mo.) revealed initial details of the project last week, reported that AEC scientists are investigating the proposed site.

The Alaskan operation would be the first to employ the industrial version of the H-bomb, developed by AEC's "Project Plowshare."

Foamsil, a new insulating and refractory material claimed to have greater practical temperature range than any other, has been developed by the Pittsburgh Corning Corp. Of 99% pure fused silica, Foamsil's made by activating the silica with a foaming agent, boiling it in a specially designed continuous horizontal electric furnace.

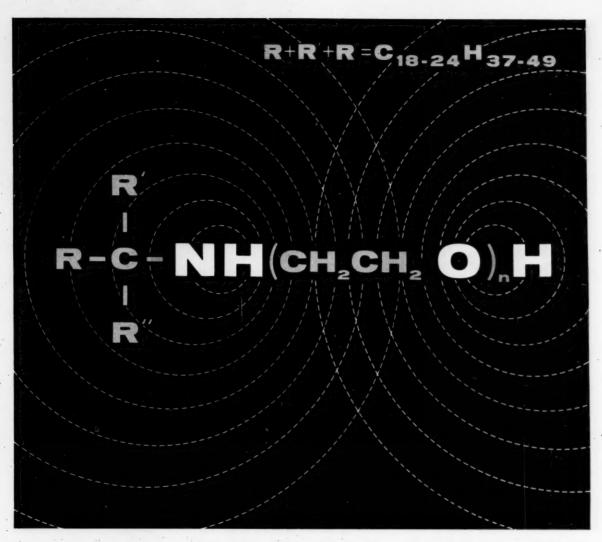
Properties cited that should interest process industry firms: resistance to all acids except hydrofluoric and hot phosphoric, to cyclic temperatures from -450 F to 1600 F, to continuous temperatures to 2200 F. The sealed silica cells prevent absorption. In insulating value, 1-in. thick Foamsil is said to be equivalent to 18-in. thick acid brick at 250 F. The material has been subjected to 1600 F for more than two years without showing evidence of deterioration, according to PCC. The light-weight material (10 to 12 lbs./cu. ft.) will sell for about $50 \phi/\text{bd. ft.}$

Foamed metals will be tried as a possible weapon against smog. Taking a brand-new tack on the smog problem, the Air Pollution Foundation (San Marino, Calif.) has placed a one-year research contract with Bjorksten Research Laboratories (Houston, Texas). Properties of foamed metals indicate promise that they may serve as a base for oxidation catalysts that would not be poisoned by the lead in gasoline. Bjorksten will try to find suitable foamed metals for the job. Data will be made available to potential manufacturers for commercial development.

The Foundation looks on the new project as a gamble, but one easily justified by the potential payoff.

Polyurethane foam may find a job mending bone fractures—substituting for pins, nails or other metal gadgetry. Drs. Michael Mandarino and Joseph Salvatore last week described to the American Medical Assn. meeting in San Francisco their experiments with the foam at the Hahnemann Medical College and Hospital, Philadelphia. They've used their "bone glue" on more than 130 dogs suffering from almost every type of bone fracture and many kinds of bone disease or congenitally deformed bones. Nontoxic and easy to apply, the foam sets in 10 minutes, forms a dense, strong bond that's completely compatible with the body's bone-building mechanism. Results, they say, have been excellent.

Mandarino, a former professional football player, mentioned his work some time ago (CW Technology Newsletter, Nov. 17, 1956). But because the work was in an early stage, he would not identify the glue.



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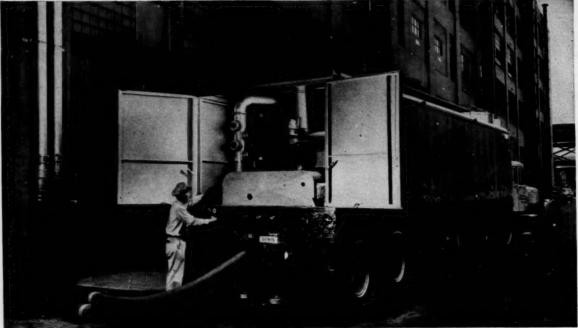
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The Arithmetic of Materials Handling



Developed by Fuller, American Sugar's new Airveyor Bulk Transport Trailer permits high speed, low cost loading and unloading of Domino sugar.

AMERICAN SUGAR DELIVERS IN BULK WITH NEW FULLER AIRVEYOR, TRANSPORT

When American Sugar Refining Company recently turned to Fuller-Airveyor Bulk Transport Trailers for delivering sugar to the Long Island City plant of Louis Sherry Preserves, Inc., they not only eliminated baghandling, but also did away with lift trucks, scrolls, bucket elevators, and many wasted man hours.

One man now unloads 30,000 pounds of Domino bulk sugar in less than a half hour — and stores it 150 feet away. The Airveyor Bulk Transport Trailer does all the work. Waste and contamination are eliminated.

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Vice-President Strawn checks manufacturing units.



Vice-President Griswold briefs marketing staff.

Gearing Marketing Plans to New Capacity

While Jefferson Chemical Co. Inc. (Houston, Tex.) was bringing its new ethylene-propylene facilities onstream last week, it was taking final steps toward setting up its organization with the "marketing concept."

The steps, taken by the Jefferson board of directors, were the creation of three new positions - executive vice - president, John McPherson; vice-president for marketing, Donald Griswold; and vice-president for manufacturing, Lynn Strawn. Together with G. R. Bryant, company president, George Plunkett, treasurer, and Rush McCleary, research and development general manager, they'll give a new role to the firm's operating committee. It will be the chief instrument for carrying out the three basic elements of the firm's marketing concept: integrating all corporate activity, orienting the product line to the needs of the consumer and emphasizing "management for profit."

Guiding Lightly: First task of the newly revamped committee will be to steer new production to the marketplace. The output will come from:

• Tripled capacity for ethylene, doubled capacity for ethylene glycol and a 50% boost in output of ethylene oxide.

 Initial facilities for propylene chemicals, such as propylene, propylene oxide, propylene glycols, polypropylene glycols and other derivatives.

• Canning lines for "private label" ethylene glycol antifreeze. Jefferson will package and warehouse private-label antifreeze in the principal consuming areas of the U. S. In moving into the private-brand field, Jefferson hopes to crack markets not previously open to it, eventually sell up to one-third of its total ethylene glycol output there. Until now, Jefferson has sold its entire production through national marketers and one of its parent com-

panies (The Texas Co.) in the form of bulk, raw glycol.

New chlorine-caustic soda facilities. The chlorine will be used captively; the caustic will be marketed.

• An expanded line of piperazine and specialty chemicals. Just what these chemicals will be, however, Jefferson won't say.

Marketing Changeover: Installation of the marketing concept at Jefferson has followed a gradual course, stems from a five-year sales forecast. A marketing department and a commercial development group (split into market research and new product development sections) were organized before the new appointments and the product manager setup were made.

In the new organization, Griswold will be responsible for the over-all marketing effort; his general sales manager will direct field sales. Recently appointed product managers (for glycol products, specialty prod-



ucts, alkali products and antifreeze glycol) will manage all aspects of their products—technical service, inventories, advertising, market intelligence, product information. Generally, the product managers will have a high degree of responsibility in planning sales for each group of products.

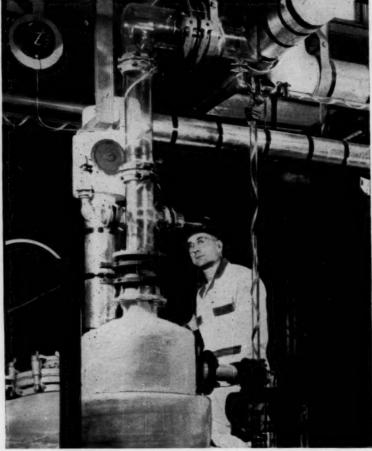
The product-manager structure will give Jefferson a clear organization line for a single product or a product family. The line extends from research through to manufacturing, customer contact and sales. Previously, says Griswold, no such system existed.

Field sales staffers will handle all product lines; product managers will integrate their function with the home product staffs. And, because of the substantial expansion, Jefferson will be expanding its selling and technical service staffs.

Integration Aids: To smooth marketing and production integration, the operating committee is planning weekly meetings. All members serve in a line capacity; the top executives in the research and development, manufacturing and marketing departments each serves in "staff" capacity as well.

The operating committee will closely coordinate with another group, the research policy committee, comprised of the top research, manufacturing and marketing executives. This committee's job is to ensure that research is apprised of marketing's needs and plans and that new-product ventures get thorough screening to carefully determine both production and marketing feasibility. The group is also the principal liaison unit enabling the manufacturing and marketing departments to seek help from the research and development department in evaluating quality problems, competitive samples and in solving broad technical service problems.

The close meshing of sales, production, finance, and research and development is the foundation of Jefferson's idea of the "marketing concept"—the "management of the product-customer relationship." This relationship, says Griswold, has top priority in giving shape to a company and defining its present and future organizational needs. And for Jefferson, Griswold adds, the marketing concept will mean improved customer service, company communications and more clearly defined sales objectives.



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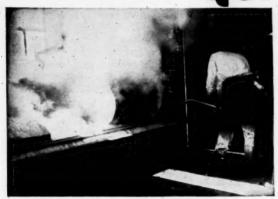




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SALES

DATA DIGEST

• Aliphatic Chemicals: A 52-page catalog supplies technical information on olefins, fatty alcohols, hydrocarbons, hydrogenated and vegetable fatty acids, glycerides and sperm oil products. It also provides data on gas chromatographic composition, solubility, compatibility, physical constant charts, and briefly describes major applications. Archer-Daniels-Midland Co. (Minneapolis).

• Epoxy Compounds: Liquid-base epoxy resin, Hysol 6040, is the subject of a three-page bulletin. Chart shows comparative properties when resin is formulated with five widely used hardeners. Houghton Laboratories, Inc. (Olean, N.Y.).

• Sulfur Dioxide: Brochure presents solubility, vapor pressure, liquid expansion, density and infrared absorption spectra information. Specifications, specification test methods, chemical properties, toxicity and suggested uses are described briefly. Ansul Chemical Co. (Marinette, Wis.).

• Blowing Agent: Two bulletins, PKB-1 and PKB-2, describe Kempore R-125, a blowing agent derived from hydrazine. PKB-1 outlines the agent's applications in natural and synthetic rubber; PKB-2 covers use in expanding calendered sheeting, extruded stocks and plastisol compounds based on polyvinyl chloride resins. National Polychemicals, Inc. (Wilmington, Mass.).

• Product Chart: Revised booklet tabulates important physical properties for Hercules's line of plasticizers, synthetic resins, pentaerythritol, formaldehyde, aromatic acid esters and nonionics. Synthetics Dept., Hercules Powder Co. (Wilmington, Del.).

• Organic Chemicals: Two separate data sheets outline chemical and physical properties of dimethyl acetamide and allyl esters. The amide is suggested as a solvent for synthetic resins and as a foam depressor for mineral oils formulated with phosphorus acids. The allyl esters bulletin contains data covering monocarboxylic acids and diallyl esters of dibasic acids. Borden Chemical Co.

• Amino Pyridines: Folder highlights physical constants, specifications and chemical reactions for 10 aminopyridines. Concise bibliography is included. Reilly Tar & Chemical Corp. (Indianapolis). the
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Market Newsletter

CHEMICAL WEEK
July 12, 1958

That recent ½¢/lb. lead price increase failed to stick when bullish reports about possible government lead stockpiling waned and demand for lead products remained low. Shattering producers' hopeful predictions of "no near-future reductions" (CW Market Newsletter, June 28), lead tabs last week settled back to the previous 11¢/lb. level.

Should the hoped-for word of government stockpiling come out of Washington, however, there's little doubt that the lead industry would again try to make the higher price stick.

Prices of lead compounds also dropped last week but not primarily because of the lowered cost of metal—as was the case a couple of months ago (CW Market Newsletter, May 24). The latest ½¢/lb. across-the-board cut—effective July 1— is attributed to poor demand for these chemicals.

New carload quantity prices: red lead (95%), $13\frac{1}{4}$ ¢; litharge, $12\frac{3}{4}$ ¢; and orange mineral, $15\frac{6}{10}$ /lb.

Meanwhile, the higher primary copper tag recently pinned up by Anaconda (CW Market Newsletter, July 5) is getting expected support from the rest of the industry. Last week, Phelps Dodge followed suit, posted a $1\frac{1}{2} \frac{e}{l}$ lb. higher price $(26\frac{1}{2} \frac{e}{l}$ lb.). Trade guesses are that Kennecott will soon do likewise.

Unofficial reasons for the hike, according to trade sources, include increased protection through reimposition of a $1\frac{7}{10}$ ¢/lb. import duty, prospects of government stockpiling, and some signs of improved demand for the metal.

Tank-car quantities of boron trichloride are now moving out of Stauffer Chemical's Niagara Falls plant. The raw material, vital for manufacture of exotic rocket fuels, was little more than a laboratory chemical less than two years ago.

Although actual quantities used are obviously classified information, tank-car shipments means there is already a big market for chemicals in the U.S. missiles program.

Buyers of custom-made organic chemicals are offered the services of 50% larger capacity by Eli Lilly. The firm's new, \$4.6-million chemical plant, recently put into operation at Lafayette, Ind., caters to a wide variety of needs involving chemical synthesis.

Full-scale production of nylon-6 type molding and extrusion material has begun at Foster Grant's new million-dollar plant at Manchester, N. H. Output is at a rate of more than 3-million lbs./year. The

Market Newsletter

(Continued)

firm is fourth U. S. producer of nylon and third producer of nylon-6 (derived from caprolactam).

The product, tradenamed Fosta Nylon, is described as a "prestige material" with potential markets in automotive, marine hardware, and packaging uses. The firm, incidentally, predicts that use of nylon will increase 500% in the next decade.

U. S. synthetic ammonia capacity must be upped 80% by '75 to meet farm and industrial demands, according to R. P. Westerhoff of Ford, Bacon & Davis, a consulting firm. Such an expansion represents capital investments of \$450 million, at today's costs.

Existing ammonia capacity, says Westerhoff, is about 10 billion lbs./year (CW, Jan. 12, '57, p. 64), and total consumption is nearing production capacity. Soil enrichment needs alone could preempt existing capacity in a few years; some 8 billion lbs./year of new capacity for predictable agricultural and industrial uses will be needed.

An additional \$50-million worth of extra capacity will be required, says Westerhoff, to meet demands for ammonium nitrate as an explosive. Ammonium nitrate, he notes, is "coming into its own as a preferred material for controlled blasting" and '56 consumption of 300,-000 tons will be tripled by 1975. This '56 demand figure apparently includes industrial-grade nitrate; CW estimated (June 28, p. 67) that 115,-000 tons of fertilizer grade nitrate will be exploded in '58 in strip mining and similar operations.

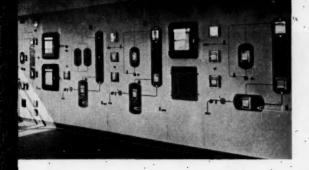
The lowly starfish may cause a \$500,000 bonanza for lime producers. Because the echinoderms have been wreaking havoc in Long Island Sound oyster beds, Congress is now drafting several bills that would appropriate about \$1 million to eradicate them in those waters.

Half the money might be spent on lime, which, it's said, is the best available pesticide for this purpose. One large oyster company reportedly has spent \$35,000 of its own money on quicklime to fight the starfish.

SELECTED PRICES CHANGES-Week Ending July 7, 1958

UP	Change	New Price
Copper metal, electrolytic, dlvd., Valley basis	\$0.015	\$0,265
Copper sulfate, cryst., 99%, dms., bgs., c.l., wks., 100 lbs.	0.35	11.05
Tankage, animal feeding, 9-11% ammonia, N.Y., bulk, ton	0.25	6.75
DOWN		
Lead metal, prime, pigs., N.Y.	\$0.005	\$0.11.
Lead, red, 95% Pb3O4 or less, bbls., c.l., wks., frt. equald.	0.005	0.1325
Litharge, coml., powd., bbls., c.l., wks., frt. equald.	0.005	0.1275
Tin metal (Straits)	0.0025	0.9435

All prices per pound unless quantity stated.



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Diethanolamine

Diethylene Glycol

Dimethyl Phthalate

Dimethyl Sebacate

Dipropylene Glycol

Dodecyl Alcohol -Dodecylbenzene -

Ethyl Acetate

Ethylene Dichloride

Ethylene Glycol

Ethyl Hexanediol

Ethyl Lactate

Glycerine-

Glycol Ethers

Hexyl Alcohol

Isobutyl Alcohol

Isodecyl Alcohol

Isooctyl Alcohol

Isophorone'

Isopropyl Acetate

Isopropyl Alcohol

Methyl Alcohol

Methyl Amyl Alcohol

Methylene Chloride

Methyl Ethyl Ketone

Methyl Hexyl Ketone

Methyl Isobutyl Ketone

Monoethanolamine

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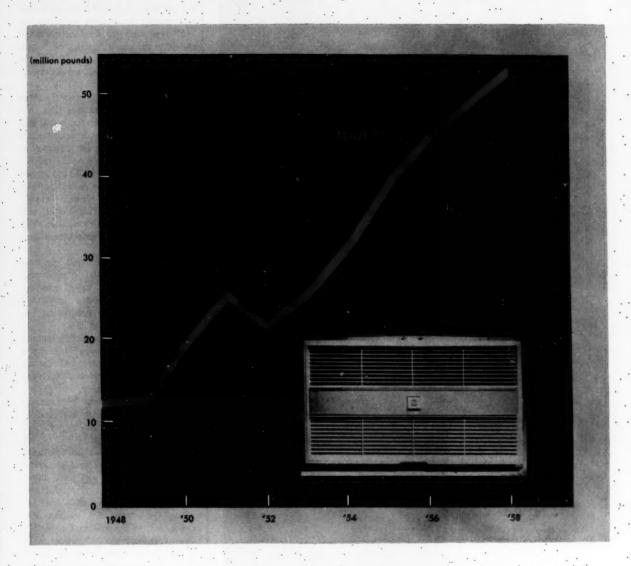


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MARKETS



Chloroform Cashes In on Home Cooling

With a record half-year's production just behind them, U.S. chloro-form makers figure on hitting an all-time output mark of 55 million lbs. in '58. That's 10% greater production than in '57, 350% more than the 12.6 million lbs./year made a decade ago. And there are good indications that chloroform business will continue to bring new production records in years ahead.

Main contributors to chloroform's growth have been the soaring demands for it as raw material for chlorofluorohydrocarbon refrigerants

of the "22" type and for Du Pont's Teflon plastic. Together, they account for some 85% of total current U.S. chloroform use.

Requirements for chloroform will be hoisted again soon by Union Carbide, this year starting up its Ucon-22 refrigerant plant. It will be the fourth producer to market such a product—already in the business are Du Pont (making Freon-22), Allied's General Chemical Division (Genetron-22), Pennsalt (Isotron-22).

Much of the optimism about refrigerants—which this year will take some 55% of all domestic made chloroform—has been due to the greater acceptance of home air-conditioners.

Slim Design, Fatter Sales: With rising sales of home units has come a change in type of favored refrigerant. A few years ago, fluorocarbon-12 refrigerant (requiring carbon tetrachloride rather than chloroform as raw material) was the leading refrigerant for home coolers as well as larger packaged commercial units.

But consumer preference for smaller and slimmer cooling units has



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MARKETS

nudged fluoroearbon-12 out of homeunit market leadership, jockeyed the "22" type into it. Reason: chemical and physical characteristics of fluorocarbon-22 are better suited for the small compressors in small conditioners.

At least one leading manufacturer of refrigerator compressors says that all its new compressors for home and packaged commercial air conditioners are now designed for the 22-type refrigerant.

Plastic Runnerup: Second-largest outlet for chloroform is in production of fluorocarbon plastics—mostly Du Pont's Teflon. This outlet will take an estimated 30% (about 1.65 million lbs.) of U.S. chloroform output this year.

Although Du Pont won't say how much Teflon is now being produced, demand for it is said to be growing. One trade estimate—not confirmed by Du Pont—put production at about 5 million lbs. in '56.

Growing markets for Teflon include manufacture of insulators for many types of electrical wires and cables, and of valve components, such as gaskets and packings.

Drug Market Switch: Pharmaceutical uses for chloroform have undergone marked changes in the past decade. This year, about 10% of all chloroform will be used in the manufacture of pharmaceutical products; a decade ago, this outlet took about 55% of the total annual production. This means a decline of some 1.4 million lbs.—from 6.9 million lbs. used in '48, to 5.5 million lbs. in '58.

Ten years ago pharmaceutical makers used chloroform largely as a solvent in the manufacture of corticosteroids and penicillin.

Current medical applications of chloroform include anesthesia, as solvent in extraction of vitamins, and in the preparation of cough medicines and rubbing liniments.

Numerous miscellaneous applications of chloroform—e.g., special solvent in textile degreasing, extraction of food flavors—take about 5% of total production.

Chloroform's future is most clearly tied to the demand for refrigerants and fluorocarbon plastics. And the prospects in these fields are bright enough to justify the industry consensus that chloroform consumption will be gaining for a long time.

AP-58-2



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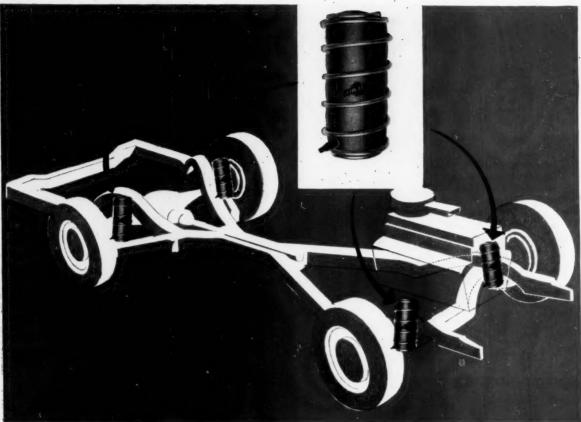
By the end of this summer, U.S. alumina capacity will get its second big boost within a year—this time from Ormet Corp.* One 500-tons/day unit of the \$55-million plant (at Burnside, La.) is now operating; another is nearing completion. Together, they will provide some 345,000 tons/year.

This new alumina capacity adds to the production from Kaiser Aluminum & Chemicals' 430,000-tons/year plant at Gramercy, La., which last year increased the U.S. capacity to almost 4 million tons/year (CW, Oct. 12, '57, p. 142).

* Owned jointly by Olin Mathieson and Revere Copper & Brass.

Ormet's alumina will be shipped by barge—reportedly a transportation first for the industry—to the firm's \$100-million reduction plant at Clarington, O. Now onstream, this plant will hit full production by '59. Its rated capacity of 180,000 tons/year of primary aluminum makes it the second-largest plant of its type in this

Two-thirds of Ormet's annual aluminum output—about 120,000 tons—is earmarked for Olin Mathieson; most of it will be used in Olin Aluminum's rolling mill, nearing completion at a site near Ormet's reduction plant. The remaining 60,000 tons will go to Revere in Baltimore and Chicago.



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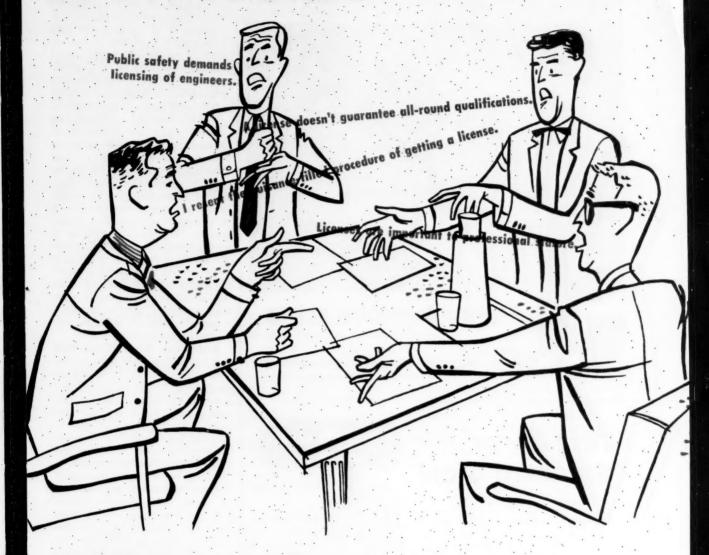
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ENGINEERING



Engineering Licenses - Need or Nuisance?

California is the scene this week of a controversy that may very well affect chemical engineers throughout the country. The issue: compulsory licensing of all professional engineers in the state.

Center of the controversy is proposed state legislation introduced two years ago and now nearing the critical stage—where it will either be brought to the floor or die in committee. If enacted, the bill would extend to all engineers in the state the mandatory licensing requirements currently limited to structural and civil engineers and business owners.

The bill raises several questions: Would such a law truly assure greater engineering competence, hence public safety? If not, are the inconveniences it entails counterbalanced by some positive benefits to the engineers? For many ChE's, it would mean special study and review in preparation for an examination at the state's convenience, in addition to a fee payment. And if benefits to engineers are problematical, should not registration be a voluntary matter only? Here's CW's sample of industry and corporate views on these questions:

Spirit vs. Letter of Law: Not even

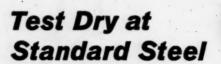
the most outspoken opponent of compulsory registration takes issue with the avowed purpose of the measure—concern for public health and safety. But many feel that existing regulations governing corporate engineering practices are adequate safeguards.

Most states now require that only the engineer "in responsible charge" of a project involving public health and safety be a registered professional engineer in that state. These provisions apply mainly to civil and mechanical engineers, affect a relatively small number of chemical engineers. But this would, of course, Look to the men of WKE to open up new and unusual vistas of plant design and engineering, based practically on time, budgets, production—and long-range objectives and profits.



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change if general compulsory licensing should become widespread.

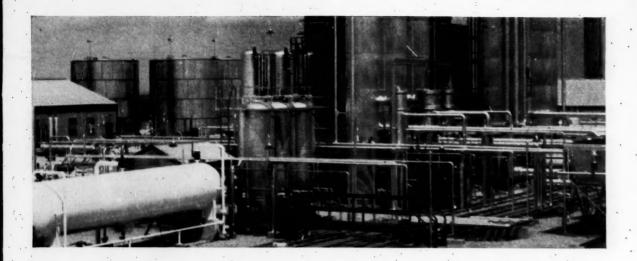
Where Is Safety Involved? Says Robert Sherrill, president of Bulwark Corp. of America (El Monte, Calif.) and secretary of the Los Angeles section of National Institute of Ceramic Engineers: "... the element of public safety rarely enters into our work. If all persons engaged in this process (ceramic coating) were required to be licensed engineers, it would hinder us. We would squirm quite a bit ... and I believe the same would be true for most small companies."

John Bills, manager of chemical market research at American Potash & Chemical Co., expresses a similar opinion: "It would be different if chemical engineers dealt directly with the public as does, say, a physician or an attorney. But most often, chemical engineers are working for companies that are competent to judge their capabilities. And the company's high standards serve to shield the public from incompetence."

Professional Peers: Emphasizing that registration would not be politically tainted, W. H. T. Holden, an electrical-mechanical engineering consultant in Pasadena and former president of California Society of Professional Engineers, points out that the licensing board would be composed not of politicians but of qualified persons—presumably other engineers.

Holden recognizes the problem of distinguishing between engineers who are simply doing work in a minor branch of engineering and those who are practicing engineers. He also foresees other difficulties arising from the overlap that exists among the various branches of engineering. But these problems could all be solved by liberal interpretation of the legal requirements. Says Holden: "There is no justification in law for restrictive action except for public welfare."

Law No Guarantee: Another oftvoiced criticism of compulsory licensing is that it implies—but does not
guarantee—competence on the part of
an engineer. Gordon Alles, who operates a small private chemical laboratory in Pasadena, opposes licensing,
says it would be impossible to set up
definitions of chemical engineering
that would separate it from the practice of chemistry. Moreover, says Alles, license qualifications would guarantee minimal competency, but would



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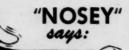


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ENGINEERING

not distinguish the relative grades of competency.

Theodore Weaver, of Fluor Corp. (Los Angeles), one of the most vigorous opponents of compulsory registration, is also outspoken against the too general competence implied by a professional engineering license. Says Weaver, a registered engineer, "The only protection anyone has from my practicing in fields in which I have no capability is my willingness to disqualify myself from them."

Companies have a similar responsibility, since most states require registration of only the engineer in responsible charge of a project. It is possible to comply with the letter-if not the spirit-of the law by having the seal of the professional engineer administered by a license holderand it is also possible that the license holder is not in a position to evaluate every detail of his subordinate's work. One California company admitted that if compulsory licensing were put into effect it would get around overstrict requirements by simply having a licensed engineer initial the work of draftsmen.

Ensuring Against Misuses: Simply having work checked by a licensed engineer is generally all the law requires, but many companies have established policies aimed at preventing possible abuses of this practice. Dow Chemical Co.'s Texas Division, for example, makes PE registration mandatory for all its engineers above the level of design engineer. And the company strongly encourages other engineers to register as well.

Du Pont's James Hallett outlined his company's views on the subject at a recent meeting of the Midland, Mich., section of AIChE (a session in which the pros and cons of licensing were hotly debated). Hallett said an engineer who feels that he does not have to register as long as the minimum state regulations are being met shows that he is "content to let someone else who is registered assume the responsibility."

In an effort to avoid this complacency, Du Pont's engineering department officially encourages registration, although it does not require it. Said Hallett, "Essentially, all engineering supervisors are registered."

Professional Stature: Another point often advanced in favor of registration (although not within the realm covered by state compulsory registration) is that it would help give engineering more "professional stature." Acknowledging that true professional stature is a product of many factors, Hallett says, "Registration is one of several things necessary to achieve professional recognition."

On the other hand, the policy of AIChE, as interpreted by its executive secretary, F. J. Van Antwerpen, at the Midland meeting, is that "professional standing is not conferred by a license or by a society membership. Rather, it must be earned by the individual engineer. Licensing is an act of the state to protect the public; it does not inherently create or recognize a profession."

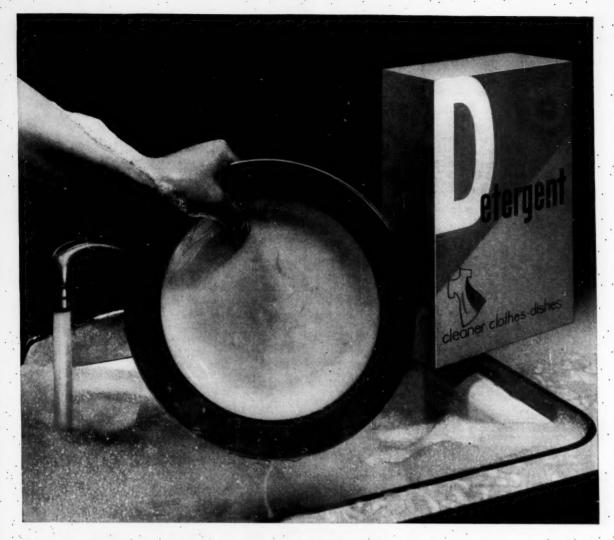
This is the attitude of many an established chemical engineer who regards his experience as his badge of professional caliber. To such a man, registration, with its fees and paperwork, may be little more than a nuisance. Of the respondents to a recent AIChE survey, only 30% were registered engineers. And three-fourths of these said they felt that registration was unimportant.

Even those companies that favor registration of their own engineers often prefer to take no official stand for or against compulsory state licensing. And the majority of the engineers queried by CW were strongly in favor of leaving professional engineering licenses up to individual choice.

Sharing Know-How

Bell Telephone Laboratories last week disclosed details of laboratory studies of its new helium diffusion process (CW Technology Newsletter, May 17). On hand were 36 representatives of natural-gas suppliers and transporters, compressed-gas manufacturers, gas-reduction engineering companies, and government agencies—all of whom have expressed interest in the commercial potential of the process.

The company described in detail the physical properties of the various glass materials of construction and the methods used in making laboratory separation equipment. It has not yet established firm licensing arrangements, would say only that, like many other Bell-developed techniques, the helium separation process would probably be made available "at a reasonable fee, under nonexclusive licenses."



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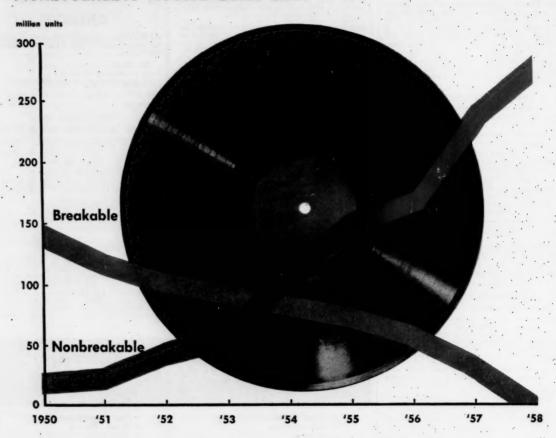
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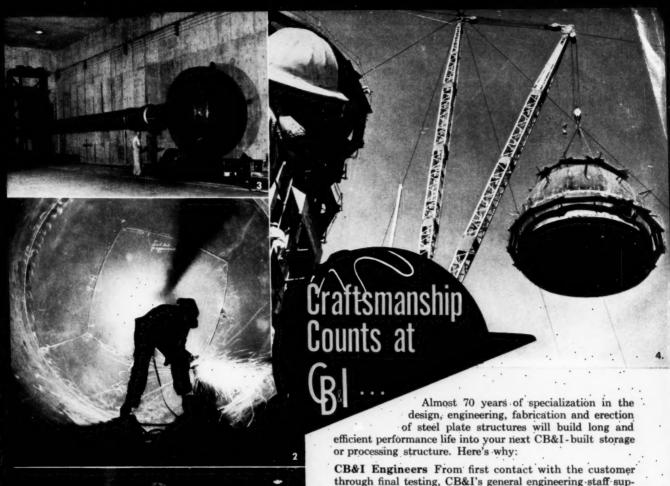
Records Sound Sweet to Chemical Makers

Chemical manufacturers are reaping a small but tidy profit from the recording industry, another growing outlet for chemicals. This year, the nation's disc buyers will boost sales to an all-time high of some 300 million units.

More than 98% of these platters are nonbreakable, an outlet for at least 28 million lbs. of polystyrene and vinyl resins. Eight years ago, nonbreakable discs took only a 15% slice of this market, used just 2.5 million lbs. of the plastics. Ten years ago, the bulk of records were breakable, shellac-based types. The advent of microgroove recording

necessitated use of softer resins, more sensitive to mold details. First vinyl resins and then polystyrene resins met these requirements; and today they virtually dominate the record-making industry.

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GREENVILLE, PA. and at NEW CASTLE, DELAWARE.

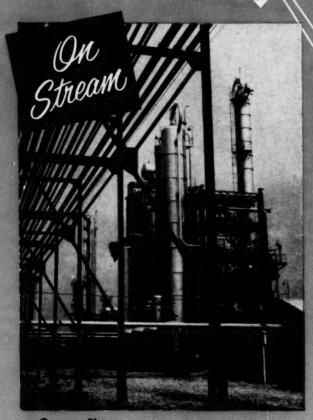
In Canada: HORTON STEEL WORKS LTD., TORONTO, ONTARIO
REPRESENTATIVES AND LICENSEES:
Australia, Cuba, England, France, Germany, Itoly, Japan, Netherlands, Scatland

- 1. 5-in. thick plate for reactor is fabricated at CB&I's Birmingham, Alabama plant.
- 2. Workman smooths seams on an assembled section.
- X-ray machine for checking seam welds. Machines operating at 1,000,000 and 2,000,000 volts are used to completely inspect steel vessels as much as 10 inches thick.
- 72-ton top section for reactor-regenerator is lowered into position under supervision of CB&I erection specialist.

Plants Designed for
Mitsui Petrochemical Industries, Ltd. (Japan)
by



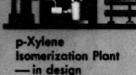
Ethylene Oxide-Glycol Plant

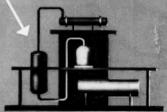


Cumene Plant



- in design





Terephthalic Acid Plant
— under construction



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